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Address in Medicine
ON
THE RELATIONS OF THE CIRCULATION.

Delivered at the Eightieth Annual Meeting of the British Medical Association

BY G. A. GIBSON, M.D., D.Sc. EDIN., LL.D., F.R.C.P. EDIN., HON. F.R.C.P. IREL.,
PHYSICIAN, EDINBURGH ROYAL INFIRMARY.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—The honour of delivering the Address in Medicine, which, by the grace of the Council, has fallen to my lot, is the highest distinction, in my judgment, at the disposal of that body. My grateful appreciation of the favour shown to me is attended by the reflection that no privilege can be divested of responsibility; it is my duty to turn this opportunity to a useful purpose, so far as lies in my power.

INTRODUCTORY REMARKS.

As most of my life work has lain in the observation and investigation of the circulation, it is only to be expected that in a consideration of the problems it presents lies my best hope of practical utility. Another strong influence draws me also in the same direction. Six years ago, at our meeting in Canada, you, Sir, when occupying the position now accorded to me, chose for your subject "The Circulation viewed from the Periphery." Many problems arising out of your suggestive remarks forced themselves upon my mind while listening to your words, problems mostly concerning the manner in which the circulation is brought into relation with the body at large, and to-day it seems fitting, while you preside over us, to make an effort to answer some of the questions springing from your statements and still claiming our attention.

It is possible—nay, even probable—that such an attempt may seem too ambitious; the subject is at once so extensive and so elusive. In the hope, nevertheless, that good may somehow come from honest inquiry, and with the assurance, moreover, that any shortcomings will be leniently judged, my desire is to lead you with me to some of the intricate and perplexing paths in the field of modern medicine. If the pursuit of science be indeed, as we believe it to be, a pilgrimage in quest of truth, it is manifestly incumbent on us to discover what its nature is and where it is enshrined. Modern physiology had its birth in the central facts of the circulation, and numerous researches on that subject during our own epoch—the age of scientific medicine—have given abundant proof of earnestness in the search.

In considering some of the recent additions to our knowledge, whether gained in the hospital or in the laboratory, it is more than likely that many of the thoughts about to unfold themselves will be to my hearers in no sense novel. Certain are, indeed, current coin; all have for some years been in the air. A certain amount of hesitation in advancing ideas which seem to reflect upon ourselves a flavour of originality is only natural; most of us tremble lest we fall into the ranks of those who, by regarding the "stepping stones of their dead selves" as rocks upon which others are still reposing, become the victims of self-complacency. The complex mechanism by which the balance of the circulation is maintained has, during the whole modern period, been the subject of untiring research. The student has not been contented with fleeting phantoms, like "a dream within a dream"; he has yearned after facts and has longed to reach down to the bedrock of certainty. Amongst the objects which have aroused the patient enthusiasm of the worker, the connexions between the central and peripheral divisions of the cardio-vascular system, and the relations between the whole of that system and the body at large, have furnished objects of investigation absorbing his energies. In recent years a wealth of reward has been vouchsafed to him.

Nature is not ungenerous. She does not hide herself with the veil of Isis; she is ever willing to reveal her secrets to the humble suitor. Some of the appearances she presents may not be clear at first, but in time their hidden meaning is grasped. The end of the quest can never be gained by incantation; only by dint of patient and ceaseless effort is the goal won. Without facts, often gathered with painful effort, all our arguments are in vain. Do you remember the tradition of Pietro di Medici, unworthy successor of Lorenzo the Magnificent, who ordered Michael Angelo to fashion a statue of snow? The story has aroused the scornful contempt of four centuries, and may be traced in the burning words of Mrs. Browning and Mr. Ruskin. In similar fashion, the man of science who is asked to devote his mind to discussion without permanent truths wherewith to reason is in the same position as the great sculptor, when he was commanded to carve a figure out of melting material.

EVOLUTION AND DEVELOPMENT.

The part played by the circulation in the integration of the organism is a natural subject for our thoughts in this city, where the author of the fascinating Silliman lectures presides over the domain of physiology. The subject must be admitted to be a very large one, as it does not only include the consideration of the connexions of the central and the peripheral portions of the cardio-vascular system, but, as already suggested, the relations of the circulation as a whole to the body at large. It comprises the nature of the actions and reactions continually in operation, and the character of the stimuli and responses likewise constantly at work. The circulation in all the higher animals may be regarded as based upon, or concerned with, four primary groups of principles. It is based upon mechanical arrangements which form the foundation for all its operations. It requires chemical changes by which it is maintained, and for which it provides possibilities, by transference of matter. It is modified by glandular secretions, which profoundly alter its mechanism and chemical processes. It is affected by nervous agencies which deeply influence the performance of its functions.

When we gaze upon the long line of being through which the mammal has been evolved we can discern certain different stages of development, physiological no less than morphological. Amongst the simple organisms belonging to the protozoa, physical and chemical agencies alone are required—simple structure and function are alone brought into play; amongst the complex beings constituting metazoa, glandular and nervous influences make their appearance with ever-increasing complexity—as we arise in the scale of life elaborate structure and function are necessary. To which part of the masque of life shall we wend our way in search of observations with which to illustrate the subject? Whithersoever we turn our eyes we can see but a small part of the drama at once. We do not yet stand "upon a Peak in Darien." We can find examples of our meaning in the growth of youth and the decline of age, in conditions of health and states of illness. We shall have occasion, in looking into certain processes which are to occupy our attention, to trace out the development of nervous and glandular agencies in their evolution as well as involution; and it will be necessary for us also to glance briefly in passing at some particular diseases which will be helpful in lighting the path of inquiry.

Many stages of being in the evolution of the mammal are analogous to phases of life in the development of its individual representatives. The analogies involve structure as well as function. In the newly born there is not merely disproportion in the size of different parts and organs as compared with the adult, but there is also difference as regards function. It would serve no useful purpose on this occasion to dwell particularly on the infantile divergencies from the normal of adult life as regards size and weight; but it is of importance to linger over certain deviations in function. The heart of the baby, in relation to the weight of its body, is considerably larger—expressed in percentages of total weight it is almost 0·9, as compared with a little over 0·5 in the adult—almost double; even more striking is the fact that the frequency of the heart beat is much greater, being from 130 to 140 per minute—roughly speaking, double that of the adult; the whole circuit of the blood is therefore traversed in a much shorter time—rather more than one-half. It therefore follows that the blood is renewed in the tissues of the baby with greater rapidity than in the adult. The total amount of blood, as compared with body weight, is considerably larger in the baby than in the adult; and as the respiratory work, although increasing absolutely with the growth of the body, is nevertheless relatively greater in early life, the absorption of oxygen is much more

active than the production of carbonic acid. Metabolism, as the result, is extremely active within a few days of birth.

GROWTH, EQUILIBRIUM, AND DECLINE.

The glandular system soon after birth shows some interesting contrasts to the normal of the adult. The lymphatic system is extremely prominent and the lymph circulation remarkably active. The thymus body increases in size up to the second year, from which point, as a rule, it undergoes retrogressive changes. The thyroid gland is larger in the baby than in the adult, while, on the other hand, the spleen is slightly smaller. This is what might *a priori* be expected; anabolism is in excess of katabolism. The glands which yield an external secretion show variable activities in the baby. The saliva, for example, is very scanty until dentition begins; it is also less active in the digestion of starch than is the case in the adult; on the contrary, the gastric secretion has adequate peptic powers; the pancreatic secretion has active tryptic functions, although the amylolytic power is feeble. The first epoch of life is marked by the onset of dentition; and it may be held that, until the permanent teeth are nearly complete, this epoch is still existent. During it the infant passes through childhood into adolescence. Soon after the practical termination of the permanent dentition another great epoch of life takes place, and with it a new phase of activity sets in. This is conditioned by the development of the reproductive organs and results in sexual differentiation, hitherto potential, but now functional. Although "The Salique Law of Nature" shows itself from the earliest period, even at birth, yet the differences between the sexes, especially in respect of external characters, occur in relation to the advent of reproductive possibilities. From the commencement of this epoch until the end of maturity and the commencement of decline the changes are so slight as to be almost imperceptible, but in the fifth decennium, in most persons of either sex, alterations both in structure and function become obvious. The general outcome of these changes may be stated in broad terms as a tendency on the part of both sexes towards each other; in other words, there is an approximation in each to a common type. It cannot be doubted that the divergences from such a common type during adolescence and the return towards it during senescence are determined by the functional activity of the reproductive glands; the recent work of Geddes and Marshall, although on different lines, gives clear evidence of this fact. As old age advances, along with a gradual weakening of the muscular and nervous apparatus, there are at once external and internal changes of the most interesting kind, and the metabolic activity of the body, which in youth not only balanced the daily waste but added new material, and in adult life was sufficient to meet the demands with ease, becomes so impaired as to be unable to sustain the frame entirely. It is probable that every tissue in the body participates in these retrogressive metamorphoses, but there can be no doubt that the glands, heart, and vessels play the most important part. In the shrinking of the skin, the loss of its appendages, the tendency to calcareous and fatty degenerations, we see the effects of such changes, and about the tenth lustrum certain degrees of a myxœdematous tendency are extremely common. From this point the changes follow with increasing rapidity, until there ensues the final phase, so beautifully described by the Hebrew preacher and the Roman poet. How growth, equilibrium, and decline are related to the circulatory, glandular, and nervous systems some attempt at explanation will, in the following remarks, be made. The disturbances of the normal processes by the incidence of disease, whereby new chemical and biological problems are involved, will also receive our consideration.

RELATIONS BETWEEN NERVOUS AND CIRCULATORY APPARATUS.

Let me carry you now in thought, before entering upon the glandular mechanism, to some examples of the wonderful nervous influences which preside over the heart and vessels, linking them up with the rest of the body. The whole life of an animal, according to Starling, "may be looked upon as a series of reflex actions." Nowhere is this more obvious than in the relations existing between the nervous and the circulatory apparatus. Of this fact a few simple illustrations may be cited. The idea of profound disorders of circulatory relations through vasomotor disturbances has been gradually growing up since the discovery of the nervous connexions controlling the circulation. The observations of Landois on the reflex origin of anginous pain, and of Nothnagel on its connexion with vasomotor contraction, as well as the more recent work of Pal on vascular crises, furnish sufficient evidence of this proposition. The receptive field, as Sherrington shows, presents a remarkable contrast between the afferent tracts of the somatic and splanchnic realms; there is a wonderful richness in receptors of the former, or exteroceptive, as compared with the remarkable poverty of the latter, or interoceptive field. Mackenzie and Head have taught us how splanchnic impulses reaching the receptive and perceptive centres are referred by them, as the result of their development, to the somatic area. Nowhere is this truth more clearly manifested than in the various degrees of cardiac pain.

Since the early researches of our countryman, Lower, into the nature and cause of dropsy, the matter has been the preoccupation of many an anxious inquirer. One of the first steps in our modern knowledge of this important subject was the discovery by Ranvier that stasis in a limb is followed much more certainly and much more quickly by œdema if the nervous influence of the part be withdrawn. The close association of œdema and glossiness of the skin with neuritis is now universally known, and is of analogous nature. One of the most important contributions within recent years is that of Ninian Bruce, who has shown that the initial dilatation of the vessels in the early stages of inflammation depends upon the influence of the local nerves, and that it probably is of the nature of an axon reflex. The heart and the vessels are subject to direct and reflex influences, now generally recognised as entering by every channel and flowing from every part of the body. The effects of emotion, such as joy and grief, pleasure and pain, rage and fear, are exerted directly through the action of the upper centres upon the lower. The majority of nervous influences, however, are reflex in their nature. Some of these are restricted in their localisation—the receptor, the conductor, the effector consisting in the different parts of a single neuron. Such are obviously the alterations which take place in a local hyperæmia. Between a simple vasomotor reflex like this, on the one hand, and such profound and extensive disturbances as may give the widespread changes of angina pectoris there is no abrupt transition—simply a complete chain of many links. Let me cite two recently described reflex arrangements. One of the most interesting of these reflex influences is that which we may hold as proved by Stewart in the case of aortic incompetence. The series of brilliant observations upon which he has based his theory has rendered it beyond doubt. Another admirable example of reflex influences recently studied is that suggested by Hill to explain the now generally recognised alteration in the relative arterial pressure of the arm and leg in the same disease. The arterial pressure is normally higher in the leg than in the arm, but the difference of pressure in health is very far exceeded by that which occurs in aortic regurgitation, and for this Hill has suggested that the arterioles of the leg undergo reflex contraction in order to preserve the balance of pressure in the centres at the base of the brain.

The instructive experiments of Cushing, carried out by introducing fluid into the cranial cavity, have taught us, in the most convincing manner, how intimate is the relation between cerebral compression and arterial pressure. Increased intracranial pressure in its advanced stages produces cerebral anæmia, and the centres in the medulla oblongata respond, as is necessary for their very existence, to the stimulus created by want of blood. The vasomotor centre raises the arterial pressure to overcome the compression of the centres, and at the same time the vagus centre is excited, so that the pulse-rate becomes reduced. It is not too much to say that by these valuable investigations Cushing has not only greatly widened our scientific knowledge, but has also profoundly modified our practical management of cerebral diseases. A passing reference may be permitted to the remarkable work of Crile on the state of the circulation, especially of the arterial pressure, in shock, from which we have learnt much. The recent investigations of Gray and Parsons have also assisted greatly in the elucidation of this subject.

Hitherto there has been a tendency to regard the vessels of the heart and the lungs as beyond the influence of

the vasomotor system. Until lately, little experimental evidence has been obtained of any vasomotor mechanism in the pulmonary and coronary arteries. The recent investigations of Argyll Campbell, however, show that in the case of both systems the administration of pituitary extract by perfusion causes marked and prolonged constriction. This contraction is by the physiologists regarded as evidence in favour of vasomotor innervation of the arteries. More recently Brodie and Cullis have proved beyond all possibility of doubt that the coronary arteries have both vaso-constrictor and vaso-dilator nerves, both being derived from the sympathetic system; the former are, as would be expected, the more powerful.

GRAVES'S DISEASE.

If we desire an instance in which to find an example of the intimate connexion between circulatory and glandular changes we have not far to seek—it is always to our hand in Graves's disease. Just as in the case of glycosuria, we find hereditary, neurotic, and traumatic factors at work; its invariable association with glandular and circulatory changes, moreover, has long been known. In exophthalmic goitre there are symptoms connected with the digestive system due to catarrhal and hyperæmic conditions; of the glandular system in thyroid enlargement, and less frequent alterations in the thymus, the pituitary, the suprarenal, and the lymphatic glands, as well as the spleen; the blood often reveals the presence of anæmia and, less commonly, of cyanosis, while varying degrees and types of leucocytosis are not infrequently encountered; the circulation does not merely reveal the presence of increased frequency of pulse-rate, but of very varying degrees of arterial pressure, while the heart may manifest considerable dilatation, with or without hypertrophy; the renal conditions may be largely modified, not only by the existence of polyuria, but of albuminuria or of glycosuria; the integumentary system may be the seat of the most multiform rashes, and also of atrophic changes particularly affecting the cutaneous appendages; in the nervous system are to be found remarkable divergences from normal conditions—sensibility diminished, perverted, or increased, motility usually affected in the direction of irritable weakness, with exaggeration of the reflexes and responses, diminution of muscular energy, shown by weakness of the movements and tremulousness of the muscles, and disturbances of the delicate processes of coördination, especially as regards the eye, vasomotor, and visceral changes, and, above all, profound alterations in the higher cerebral functions—such are the outstanding features of the affection.

It will certainly be useful to look further into certain matters connected with this interesting disease. A few instances of emotional causes may be given. Debove tells us of a sailor who fell into the sea at Marseilles, and thought he was about to be drowned. Almost before he was out of the water he began to show symptoms of Graves's disease. Cléret mentions an instance produced by the sudden and tragic death of a husband. In my own experience similar cases have not been infrequent. A lamplighter, after Saturday evening libations to one of his gods, in whose worship he showed zeal worthy of a better cause, did not wake up sufficiently early on a bright Sunday morning to be on his beat at the appointed hour. Living two miles from the scene of his labours, he ran the whole distance, and then proceeded, in the old-fashioned method, to put his lamps out, by using a ladder for each. On the Monday morning he presented himself before me at hospital as an out-patient, and already symptoms of exophthalmic goitre were evident. A washerwoman, while standing at her tub, received a great fright by the roof of her house falling in upon her, and she entered my ward two or three days later with pronounced features of Graves's disease. Traumatic instances are frequent. Delorme, for example, tells us of two officers who on parade fell from their horses on to their heads, and shortly afterwards were victims of the disease. Many reflex causes for the affection have been found. Irritation connected with the mucous membrane of the digestive, respiratory, renal, and reproductive systems are undoubted causes; when these conditions are relieved, the affection is greatly ameliorated. Are we to regard such emotional, traumatic and reflex cases as certainly due to purely nervous causes? By no means. The facts showing the causal nexus between the thyroid gland and Graves's disease have, in recent years, greatly accumulated. There is not merely the almost constant association of thyroid enlargement with the disease, but there are the further facts that it sometimes follows simple bronchocele, and not infrequently precedes myxœdema. The experimental production of symptoms closely resembling, if not indeed absolutely identical with, Graves's disease in different mammals, and the aggravation of symptoms produced by the administration of thyroid extract, through misdirected zeal, help us greatly in understanding the connexion.

It has long been known that the thymus gland undergoes revivescence in Graves's disease, sometimes adding greatly to the danger of surgical intervention. Some new light has been thrown upon this subject by the investigations of Bircher. He implanted fresh thymus gland into five dogs, and found very definite results. Within 24 hours there was excitement and thirst; in three days there was distinct tachycardia; by the fifth day exophthalmos was present; within 28 days there was obvious goitre. Even the ardent supporter of the nervous origin of the disease admits that, although the structural lesion or the functional disturbance of the thyroid gland is not the cause of all the symptoms, it must be recognised that it plays an important part in the genesis of a great many of them. On the other hand, the keen adherent of a purely glandular cause for the disease is forced to admit that many of the symptoms of the disease, while primarily due to thyroid activity, must be brought about by the intervention of the sympathetic system. The greatest outflow of the sympathetic fibres from the cord, as has been shown by the investigations of Gaskell and Langley, corresponds remarkably with the position of the greatest number of cells in the intermedio-lateral tract. The intermedio-lateral tract is found at three levels of the spinal cord—the upper cervical; the lower cervical, dorsal and upper lumbar; and the lower sacral region—one of the finest, as it was, alas! one of the latest, contributions made to neurology by Alexander Bruce, showed definite lesions in this tract. Changes in nervous structure have often been described before—neuritis of the cervical sympathetic by several observers; hæmorrhage into the floor of the fourth ventricle by Cheadle and Hale White; bulbar hæmorrhage with the formation of colloid bodies by Grainger Stewart and myself, as well as many obviously accidental lesions. But it is my pleasant duty to state clearly that the labours of Bruce have thrown a new light on the subject. In a case of the disease he found capillary hæmorrhage in the lateral columns of the second, third, and fourth thoracic segments of the cord, with degeneration of the cells of the intermedio-lateral tract of these segments. Now, as Langley has shown, dilatation of the pupil, protrusion of the eyeball, and acceleration of the heart, are produced by stimulating the sympathetic roots of these segments.

The question of causation seems to many observers associated with the rapidity of duration. Such instances as those mentioned above, in which the onset was dramatic in its suddenness, have often been considered as too swift in genesis for aught but a nervous cause. The celerity with which analogous symptoms were developed in dogs after the experiments of Bircher has given us new light on this matter.

MYXŒDEMA.

In almost every respect the group of affections, for the explanation of which our thanks are due to the perspicacity of Gull, stands in direct antithesis to Graves's disease. In the various forms of myxœdema, no matter how produced, we have a group of diseases contrasting most markedly with exophthalmic goitre. While the digestion and the blood may show changes somewhat analogous to those referred to in Graves's disease, there is, on the whole, less tendency to leucocytosis and anæmia. The circulatory symptoms are entirely different, as diminution of the pulse-rate and elevation of the arterial pressure are usually found, and although the heart is often hypertrophic, it has less tendency towards dilatation. Polyuria, albuminuria, and glycosuria may be found in both, but the condition of the skin and subcutaneous textures is distinctly contrasted in the two affections, except in respect of some loss of hair, and even nails, in some cases of Graves's disease. The increased bulk of the subcutaneous tissues and the singular alteration in consistence exhibited by them are characteristic points of divergence, while the striking

alteration in appearance, resulting in the stolid, squat aspect of myxœdema, as contrasted with the alert and slender appearance of Graves's disease, is most marked. When we enter upon a comparison of the nervous conditions in these two diseases we are quite as much impressed. Instead of the eager nature and neurotic features of Graves's disease, we have an apathetic character with lethargic appearances in myxœdema.

Thanks to the labours of numerous inquirers, amongst whom Murray especially deserves our grateful acknowledgments, we now have a firm foundation of knowledge for our discussion of the disease. We recognise that in some way it is intimately associated with the condition of the thyroid gland; the exact relations will appear in the sequel. It is clearly understood that the myxœdematous symptoms are dependent upon deficient thyroid activity, which may be the result of arrest of development, occurrence of disease, or surgical adventure.

ACROMEGALY.

Ever since the description of acromegaly by Marie, this singular affection has had a remarkable fascination for my mind. The enlargement of the head and extremities—particularly of the lower part of the face, the hands, and the feet; the marvellous adaptations whereby the increased weight of the head is compensated for by a decided hypertrophy of the cervical vertebræ, and that of the lower jaw by a remarkable enlargement of the temporal fossa and ridge; the strange alterations in structure of the internal viscera, which have recently been so thoroughly studied by Geddes; and the striking alterations in the field of vision, even now occupying the attention of Evans and Traquair, have invested this disease with a halo of interest, which, notwithstanding the uncouth appearance of the victim, may almost be termed that of romance. When we further consider the most interesting suggestion of the lamented Cunningham, now abundantly verified, that gigantism and acromegaly are the same disease, as it affects early years, before the union of the epiphyses and diaphyses, or adult life, when ossification is complete, we are led to regard the condition as remarkable. We may assume without fear of contradiction that acromegaly is connected with alterations, either structural or functional, in the pituitary body; the exact relation of these to the affection will be subsequently dealt with. In an address given by me to the Medical Society of London some years ago the processes of adaptation and compensation shown by this interesting disease were fully dealt with; and in a previous address to the Medico-Chirurgical Society of Norwich the speculation was thrown out that probably the pituitary body would be found to exert an action upon other glands concerned in growth; further, that certain cells of the gland might be assumed to preside over particular parts of the body. In no other way does it seem to me possible to explain some of the extraordinary cases of local hypertrophy of extremities, which must be regarded as partial gigantism, or localised acromegaly.

The exact method by which the pituitary body regulates growth is still unknown. We shall in a few minutes review the relations between the structure and the function of the gland. In this place it must be allowed that we do not know how it acts. Whether it exerts its influence directly through the vessels, or by means of the vessels and their nerves, or through a power of stimulating or inhibiting other glands, is yet unknown. My own belief has always been that its main effect is a power of stimulating other glands to activity. In this way it seems possible to account for the great strength attendant upon the excessive growth commonly seen in the early phases and for the profound weakness invariably found in its later stages. The very interesting autobiographical sketch by Leonard Mark repeats the experiences, as regards this aspect of the disease, of every one of us who has ever seriously applied himself to the study of the disease.

ADDISONISM.

Another most interesting affection, in which the glandular apparatus participates—may, indeed, be said to play a predominant part—is Addisonism. Ever since the discovery by Addison of the constant relations between pigmentation of the skin, weakness of the circulation, and disturbance of the digestion and morbid changes in the suprarenal glands this condition has been universally recognised. It is, however, only in our own times that we have learnt in what respect the obvious symptoms are related to the glandular alterations. We now know that when the usual fibro-caseous changes occur in the whole suprarenal gland, involving its medullary as well as its cortical portion, there is a complete picture of Addison's disease, with discolouration, low arterial pressure, feeble heart impulse and weak cardiac sounds, digestive disorders, and profound asthenia, showing the three important groups of symptoms. But we are now sufficiently conversant with the affection to know that if there be an alteration of the cortical portion alone there will be pigmentation only, with little or no change as regards the digestive, circulatory, or nervous systems. That, on the contrary, when the medullary portion is alone involved there will be great reduction of arterial pressure, attended by loss of tonicity and contractility of the heart, the result of which is profound asthenia.

The opportunities afforded by our new research laboratory in connexion with the medical wards of the Royal Infirmary have enabled us to obtain a very considerable number of electro-cardiograms in exophthalmic goitre, myxœdema, acromegaly, and Addisonism. Some very interesting facts have thus been discovered, which will in due course be fully described. All that need be said in this connexion at present is that there appears to be excessive energy along with increased frequency in Graves's disease; diminished electro-motive force, along with reduced frequency, in myxœdema; very variable conditions, according to the stage, in acromegaly; and, from first to last, remarkable loss of energy in Addisonism. There is a natural tendency to scepticism as regards the possibility of measuring the electro-motive force of the heart; but we shall assuredly before long be in a position to do so, as we can accurately estimate the resistance of the tissues and approximately the electro-motive energy generated by the cardiac pulsations. It will not be long before this is done in every case.

INTERNAL SECRETIONS AND THE CIRCULATION.

These affections, each in its own way so full of interest, have been chosen as the main theme of our discussion, for the reason that they furnish excellent opportunities for inquiry into the mode of operation of normal and morbid processes. The application of our new knowledge must now be attempted. All organs—in fact, all tissues—receive from the blood certain substances, and yield in return others. Every function of the body, even a simple muscular contraction, furnishes material which is restored to the blood; much of this, however, is of the nature of waste. The glands produce special substances, to which alone the name of secretion can be properly applied. All of these glands are now assumed to yield an internal secretion; many, in addition, furnish also an external secretion. As an illustration let me remark that the external secretion of the pancreas has for a long time been recognised as one of the most potent factors in the primary digestion, but it is only recently that the conception has arisen of internal secretion by the same gland—an internal secretion which is absolutely essential for the maintenance of carbohydrate metabolism. The production of prosecretin by the intestinal mucous glands, discovered by Bayliss and Starling, a substance which in the presence of acid becomes secretin, and stimulates the flow both of the pancreatic and biliary secretions, has been the first step in our knowledge of a new chapter of physiological chemistry. Secretin is obviously a substance endowed with the power of influencing tissues and organs other than those from which it is itself derived. As a stimulant or excitant it has received from Starling the name of hormone. Many glands in the body have the power of producing hormones, and year by year our knowledge of the subject is becoming more extensive and more thorough. Amongst these organs three are intimately concerned with the circulation, and to them let me (even at the risk of being tedious) for a few minutes call your attention.

Thyroid Gland.

The thyroid gland has, since the time of Schiff, been recognised to be closely associated with the nutrition of the body. It has been known from experiment that removal of the thyroid gland, and, by clinical observation, that its atrophy, result in conditions strictly analogous; and Schiff, Murray, and other observers have shown that the results of removal could be obviated by grafting portions of the gland. The further discoveries that administration, whether by skin

or mouth, of thyroid gland or any of its preparations brings about recovery from such affections have proved the effect of the gland to lie in the production of an internal secretion, as was undoubtedly upheld by Schiff. As the result of a series of experiments on feeding with thyroid, Fordyce is inclined to believe the effect of large doses to be partial inactivity of the gland, which seems to confirm the observations of Carlson, Jacobson, Thompson, Marie, and Lenhart.

Suprarenal Capsules.

The internal secretion of the suprarenal capsules has been more recently discovered. Oliver and Schäfer found that extracts of the suprarenal bodies produced extreme contraction of blood-vessels, even in very small doses. The administration of a small amount of suprarenal extract injected into the blood-vessels is followed by the production of a rise of arterial pressure, due especially to constriction of the arterioles. The effect is sometimes obscured by stimulation of the cardio-inhibitory centre in the medulla, leading the heart to beat less frequently by impulses passing down the inhibitory nerves. If the vagi have been previously cut, or their action suspended by atropine, the rise of blood pressure may be very great. The effect of such a dose lasts only a few minutes; it may, however, be repeated over and over again. It has been found that the effect is brought about directly by the action of the drug on the muscular tissue of the heart and arteries. There is also stimulation of unstriped muscular fibres in many different situations—the intestinal, vesical, and uterine, as well as of the dilator of the pupil, and of the muscles of the hairs, and of certain glands, for example, the submaxillary. In fact, the results of suprarenal injection closely resemble stimulation of the sympathetic nervous system. But it has been proved that the active substance does not exert its influence upon the sympathetic nervous system itself, but only on the tissues to which the sympathetic nerves are distributed; it produces equally strong effects if these tissues are previously deprived of their sympathetic supply. It is interesting in this connexion to recall that the cells of the suprarenal medulla are developed in the embryo from tissue common to the sympathetic ganglia and to themselves.

In addition to its action upon the arterioles suprarenal extract increases the tone of the muscular system in general. In excessive doses it produces deleterious results—marked acceleration and augmentation of the heart beat, frequent and shallow respiration, fall of temperature, paralysis of the limbs, especially the posterior extremities, glycosuria, and eventually cessation of respiration—such are the effects of overdoses.

Pituitary Body.

For many years the pituitary body has occupied much of my attention, especially in regard to acromegaly and its congeners. The structure of the gland has been particularly studied by Andriezen and Herring. The earliest investigations to ascertain whether the pituitary body has any active functions were those of Oliver and Schäfer. They found that aqueous or saline extracts, which did not lose their activity even on boiling, produced rise of arterial pressure by effects upon the peripheral arteries, which are caused to contract strongly. They did not find any marked effect upon the rate of the heart, and they did not observe any difference in action by the different parts of the gland. Howell discovered that the anterior part of the gland has no physiological effect when injected into a vein, while the posterior produced the effects on the vessels described by Oliver and Schäfer. Howell further observed diminution of the rate of pulsation, and found that if a second dose be administered within a certain time after the first the effects are not repeated. Schäfer and Swale Vincent repeated Howell's observations, confirming them in almost every particular, but finding that the diminished frequency of the heart is not constant. Schäfer and Magnus shortly afterwards noticed as one of the results of intravenous injection a marked diuresis. Schäfer further, in association with Herring, discovered that an aqueous extract of the posterior part, including the pars intermedia, has a specific action both upon the vessels and cells of the kidney. Herring showed that the anterior lobe of the pituitary body has the structure of a gland secreting into blood-vessels, and that the posterior is composed of nervous tissue, surrounded and invaded by epithelial cells of the pars intermedia. He stated that this posterior lobe may furnish secretion into blood-vessels, but holds that its arrangement and structure suggest a gland pouring its products into the infundibulum, and thence into the ventricles of the brain. He found that extracts of the anterior lobe have no immediate physiological action when injected into blood-vessels; that extracts of the posterior lobe of birds and teleostean fishes have an action similar to those in mammals—that is, rise of pressure, expansion of kidney, and diuresis. Herring further set to work to discover the relation between the substance in the pituitary body and the colloid material of the thyroid gland which resembles it. He found that thyroidectomy produced no effect on the anterior lobe of the pituitary gland; but that in the nervous part of the posterior lobe, and in the laminæ forming the floor of the third ventricle, glandular, hyaline, and colloid bodies become very numerous. The significance of these changes is, as yet, unknown.

Halliburton, Candler, and Sikes fully confirmed the observations of Herring as regards the functions of the pituitary body, and were of opinion that the substances in the posterior lobe responsible for the effects are two in number—one pressor and the other diuretic. As regards vicarious relationship between thyroid and pituitary, they carefully sought for iodine in the latter organ, with negative results. Simpson and Hunter have also attempted to investigate the possible vicarious relationship between the pituitary and thyroid glands and, so far as the presence of iodine is conclusive, they discovered no trace of iodine in a large number of pituitary bodies after thyroidectomy. Argyll Campbell studied the effects of suprarenal and pituitary extract on the blood-vessels. He found that suprarenal extract causes marked constriction of all the organs, with the exception of those of the heart and lungs. In the heart it produced slight constriction, and this was more evident in the case of the lungs. Pituitary extract contains at least two substances—one causing contraction and the other relaxation. Each is capable of producing its characteristic effect on all the arteries, except the renal, where contraction is hardly ever obtained, the result being almost always relaxation.

The functions of the pituitary body formed the subject of the Croonian lecture of the Royal Society, delivered three years ago by Schäfer, in which, after reviewing the various facts which have been mentioned, he described the effects of extirpation—the result of which, up to the date of the lecture, was uniformly death within 48 hours. Death was not the direct result of the operation, but was caused apparently by the loss of pituitary secretion. Paulesco, as well as Reford and Cushing, have performed a large number of experiments of this kind. As the result of a long series of feeding operations, Schäfer discovered that the use of the anterior lobe favours growth, and apparently the fact of grafting pituitary bodies is similar. He summed up the actions of the pituitary body as follows. The pituitary body consists of three parts; (1) anterior, formed of vascular glandular epithelium; (2) intermediate, formed of a less vascular epithelium secreting "colloid"; (3) posterior, consisting mainly of neuroglia, but invaded by the colloid, which passes through it into the infundibulum of the third ventricle. These parts differ from one another in function. The function of the anterior part is probably related to growth of the skeletal tissues, including cartilage, bone, and connective tissue in general. The chief evidence in favour of this is derived from the fact that hypertrophy of the anterior part is associated with overgrowth of the skeleton and of the connective tissue in growing individuals, and of the connective tissues especially in individuals in whom growth has ceased. The function of the intermediate part is to produce a "colloid" material which contains active principles or hormones acting upon the heart, blood-vessels, and kidneys. Probably there are several such hormones acting upon blood-vessels and kidneys independently, and also acting antagonistically, so that, according to circumstances, either a rise or fall of blood pressure, an increased or diminished secretion of urine, may be produced, and the effects on the kidney may be independent of those on the blood-vessels. The hormones which appear to be most active are those which produce contraction of the blood-vessels in general, with dilatation of the renal vessels and increased activity of renal cells, but there appear to be others which cause constriction of renal vessels and

diminished activity of renal cells: the effects of these latter are generally less lasting. There is also usually an inhibitory effect produced on the heart. Herring showed that in the elasmobranch fishes the secretion is poured directly into the blood-vessels. There is no evidence of any direct secretion by the pituitary body into the brain ventricles. This is a most interesting fact, contrasting with the state of matters in the teleosteans. In a further communication Simpson and Hunter discovered that complete removal of the thyroid gland does not, even after five or six months, lead to the appearance of iodine in the pituitary body; this does not support the Rogowitsch theory, that in thyroid insufficiency the pituitary vicariously takes on its function.

In studying certain aspects of the mystery of life we are struck by an apparent lack of uniformity in the economy of Nature. At times there is a lavishness of structure and of function which to our present knowledge appears to be almost wasteful. This cannot be better exemplified than in the abundant profusion afforded by the essential reproductive processes of every living being, whether vegetable or animal. On the other hand, Nature appears to work in many directions by methods which indicate a distinct parsimony. This was well shown by Rolleston, who, in his Oxford address, when applying Newton's statement, "Natura nihil agit frustra; et frustra fit per plura quod fieri potest per pauciora. Natura enim simplex est, et rerum causis superfluis non luxuriat"—pointed out that a law of parsimony may be found in many structures of the body. "She is prodigal in the variety of her adaptations. She is niggard in the invention of new structures." Rolleston suggested that where an organ can be diverted from one purpose and put to discharge another function, Nature will spare herself the expense of forming a new organ and will adapt the old one to a new use; where she can employ a lowly organised structure, such as elastic tissue, she will spare herself the manufacture of a highly organised structure, such as muscle; where she can utilise matter that would otherwise be wholly refuse, Nature exemplifies this law by turning waste substances to useful account. In our study of glandular processes we find Nature lavish in her general provision but parsimonious in particular instances at times.

CHANGES IN SUPRARENAL GLANDS IN DIPHTHERIA, &c.

Some of the changes in glandular activity, resulting in excess or defect of secretion, may be caused by processes which in the light of our present knowledge appear to be idiopathic; alterations brought about by particular diseases are much more easy to grasp, and a new chapter in pathology has recently been opened by certain discoveries regarding the affects of acute diseases on glandular tissue. Dubois showed that after inoculations with cultures of diphtheria and other diseases marked changes were found in the suprarenal glands. Langlois found after diphtheria inoculation that the suprarenal glands were hyperæmic, with diminution of the pressor action. Luksch ascertained, after injection of diphtheria cultures, that the pressor action of extracts from the suprarenal glands was wholly, or almost wholly, absent. Elliot discovered that exhaustion of the suprarenal glands is demonstrated by absence of the yellow staining action with bichromate salts, which was found within 36 hours of diphtheria poisoning. Rolleston suggested the employment of adrenalin to prevent heart failure in diphtheria, and Meyer also advocated its use in this disease.

James Ritchie and Ninian Bruce have found that many of the sudden deaths which occur in diphtheria and other acute infections are produced by profound changes in the suprarenal glands. After death from the experimental production of diphtheria by inoculation there is great swelling and hyperæmia of the suprarenal glands, and the medullary portion becomes completely exhausted of adrenalin. The exhaustion is complete in the less acute cases, while in the more acute there is very great diminution in the amount of adrenalin from a condition of relative suprarenal inadequacy. The presence or absence of adrenalin is easily shown by placing the fresh glands in a solution of potassium bichromate and formalin. If the medullary cells take on a yellow stain they contain adrenalin; they do not stain at all if adrenalin is absent. No other tissue in the body stains in this way, and the structures which thus react are appropriately termed "chromaffine cells" on account of this peculiar property. This exhaustion of the suprarenal glands is not specific for diphtheria toxæmia; it can also be produced by pneumococcal, streptococcal, staphylococcal, and other toxæmia. It may even be produced by any condition which throws prolonged strain upon the suprarenal gland.

In the lower vertebrates the cortex and medulla of the suprarenal bodies are separate organs. In birds they are irregularly mingled; in mammals alone does the cortex surround the medulla. The origin of the cortex and the medulla is of real import. The development of the medulla is very interesting and important. A very good description of this was furnished by Kohn. At an early stage small masses of cells are to be found on each side of the vertebral column. These cells are all identical. As they increase in size they suddenly divide into two different types. The one type grows slowly and develops into the ganglion cells of the sympathetic ganglia; the other develops more quickly, and shows the yellow staining reaction with bichromate solutions—that is, it assumes the character of "chromaffine tissue cells." The chromaffine cells and the sympathetic ganglion cells may thus be regarded as twins. The greater mass of these chromaffine cells atrophy after birth, but a few remain (1) in the midst of the sympathetic ganglia; (2) as separate masses, the accessory suprarenal bodies; (3) the largest mass remains and forms the medulla of the suprarenal glands; those in the cervical region form a small glandular mass known as the "carotid body." This manner of development is of profound significance in the relations of the suprarenal body and the sympathetic system. In a forthcoming work by Ninian Bruce, from which he has allowed me to quote, many of these interesting points will be found fully described.

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—nervous and chemical. Removal of the nervous factor is not fatal; removal of the chemical is. We are thus able to realise the full significance of exhaustion of the suprarenal glands in diphtheria, and can see how acute heart failure must be the consequence. The whole subject of glandular affections is rendered still more complex by certain cases in which they are associated together or pass one into another. Such an instance is to be found in the interesting patient described by Murray, labouring at once under acromegaly and exophthalmic goitre; an almost equally interesting case of my own, in which acromegaly was accompanied by myxœdematous features, belongs to the same category; other combinations of similar nature have been recorded and somewhat complicate the whole matter. We now know that it is not uncommon to find Graves's disease ending in myxœdema; this is comparatively easy to explain, since the increased functional activity of the thyroid gland leads in time to loss of function.

Such reflections bring us back to the point from which we started. Are we yet in a position to decide whether the messenger s which carry the impulses to the vessels and the tissues are nervous or chemical? We have seen that certain vascular processes are only possible when the vasomotor nerves are intact, but this is qualified by the further fact referred to—that destruction of the great sympathetic ganglia does not of necessity involve complete loss of vascular tone. As the outcome of certain experiments we know that the action of hormones is direct. Kenneth Mackenzie has proved that the well-marked galactagogue

action obtained from the posterior lobe of the pituitary body and a few other structures is by means of the direct effect of hormones upon the mammary gland. That it is not through the direct influence of the nervous system is quite clear, and that the nervous influence upon mammary secretion, which is well recognised, is probably an indirect one, operating, not upon the gland through its nerves, but upon the organs which supply stimulant to the blood, is most probable.

The recent investigations of Ascoli and Legnani are of profound interest. These observers removed the pituitary gland from young puppies. In each case two puppies of the same size (as nearly as possible) were selected—one for experiment, the other for control. In many cases the puppies operated on died two or three days afterwards, but in the few that survived the results were remarkable. No further growth took place; the puppy remained a puppy. The size of the body, of the head, of the limbs, remained as at the time of the operation. Ossification and dentition were arrested; the bone not only ceased to grow, but showed defective nutrition; while the nourishment of the whole organism suffered, and the animal only gained in fat. Reproductive development was completely arrested, and changes were seen in the spleen, the thymus, the thyroid, and the suprarenals. Our understanding of the functions of the pituitary gland have been further extended recently by an interesting observation by Rennie, who describes a case of infantilism which was under his observation during three years, and in which it was found that an endothelioma had invaded the pituitary body, destroying the gland, so that very little of its proper structure remained. The patient was 16 years old—quite undeveloped, with effeminate voice and other features of infantilism. The arterial pressure seemed high, and there was some polyuria, with headache and vomiting. The diagnosis was of a chronic interstitial nephritis. Harvey Cushing has recorded [illegible] of tumour compressing the pituitary gland, in which [illegible]ptoms were mainly renal, and chronic interstitial [illegible] was suspected.

[illegible]LITY OF ALTERATIONS WITHOUT INTERVENTION OF GLANDULAR ACTIVITIES.

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When we consider some of the arrangements by which the sympathetic system is linked up with the cerebro-spinal axis we can understand how profoundly the central nervous system may be affected by impulses from the periphery and how reciprocal influences are exerted. Let me mention that the grey rami communicantes appear from experimental work to be composed of fibres which take their origin in the vertebral ganglia of the sympathetic, and that these rami probably carry vasomotor impulses to the blood-vessels of the cord; we can grasp the profound significance of the connexion. The fibres of the grey rami seem, indeed, to be relay fibres on the outgoing vasomotor path, recurving backwards and carrying impulses to the vascular supply of the central nervous system. They are, therefore, recurrent, like the fibres described by Magendie as recurving and re-entering the cord with the anterior roots in order to supply the membranes of the cord with sensibility. Langley and Sherrington consider the fibres of the grey rami entirely post-ganglionic—that is, efferent from sympathetic ganglia, but intended for distribution to the cord vessels.

A paper of the greatest interest, by Elliott, appeared last week. Elliott has found that profound nervous influences, such as fright, produce very definite changes in suprarenal secretion. He is led to believe that the suprarenal glands are played upon by the splanchnic nerves in emotional reflexes with delicate adjustment.

THERAPEUTIC MEASURES.

Possibly some of my hearers may be inclined to regard the subject of these remarks as purely academic, and of no practical importance in the world of clinical medicine. There could not be a greater mistake. Every observation that has been cited to-day is of the highest value in the treatment of disease; and although our therapeutic measures are still characterised by unavoidable crudeness of means, there can be no doubt that the views of to-day are much more characterised by singleness of aim and simplicity of method than in any previous epoch of the world's history. It is probable that the art of therapeutics will remain for long one of the most difficult branches of scientific investigation. It is complicated by so many cross currents that absolute certainty is difficult of attainment. Many of our views depend on apparent analogies and indirect arguments. Let us for one moment look at the question of the action of drugs on vessels. Can we be certain that they act on muscle fibres directly, or through nerve endings indirectly? Adrenalin is believed to act on nerve endings, because it only, or mainly, causes contraction of vessels with sympathetic innervation, because it acts almost everywhere else where there are sympathetic nerve ends, and because it no longer contracts vessels after large amounts of ergotoxin, while stimulation of the vaso-motor constrictor nerves loses effect at the same time. Digitalis, again, is held to act on muscle because it contracts muscles quite irrespective of the character of the nerves going to them, because it acts on many forms of muscle in large doses, and because it continues to contract vessels after ergotoxin has been given in quantities sufficient to prevent any adrenalin action or any effect from stimulation of the vaso-constrictor nerves. These questions involve what is after all simply a balance of probabilities, as is so clearly stated by Cushny.

Thyroid Inadequacy.

The employment of thyroid extract in myxœdema is, thanks to the work of Mackenzie, Murray, and many of their successors, so thoroughly established as to require no remark. The influence of this potent substance upon the nutrition of the body must be explained by its action as a hormone. Whether it acts directly upon glands and tissues or indirectly through the intervention of the nervous

diminished activity of renal cells: the effects of these latter are generally less lasting. There is also usually an inhibitory effect produced on the heart. Herring showed that in the elasmobranch fishes the secretion is poured directly into the blood-vessels. There is no evidence of any direct secretion by the pituitary body into the brain ventricles. This is a most interesting fact, contrasting with the state of matters in the teleosteans. In a further communication Simpson and Hunter discovered that complete removal of the thyroid gland does not, even after five or six months, lead to the appearance of iodine in the pituitary body; this does not support the Rogowitsch theory, that in thyroid insufficiency the pituitary vicariously takes on its function.

In studying certain aspects of the mystery of life we are struck by an apparent lack of uniformity in the economy of Nature. At times there is a lavishness of structure and of function which to our present knowledge appears to be almost wasteful. This cannot be better exemplified than in the abundant profusion afforded by the essential reproductive processes of every living being, whether vegetable or animal. On the other hand, Nature appears to work in many directions by methods which indicate a distinct parsimony. This was well shown by Rolleston, who, in his Oxford address, when applying Newton's statement, "Natura nihil agit frustra; et frustra fit per plura quod fieri potest per pauciora. Natura enim simplex est, et rerum causis superfluis non luxuriat"—pointed out that a law of parsimony may be found in many structures of the body. "She is prodigal in the variety of her adaptations. She is niggard in the invention of new structures." Rolleston suggested that where an organ can be diverted from one purpose and put to discharge another function, Nature will spare herself the expense of forming a new organ and will adapt the old one to a new use; where she can employ a lowly organised structure, such as elastic tissue, she will spare herself the manufacture of a highly organised structure, such as muscle; where she can utilise matter that would otherwise be wholly refuse, Nature exemplifies this law by turning waste substances to useful account. In our study of glandular processes we find Nature lavish in her general provision but parsimonious in particular instances at times.

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Some of the changes in glandular activity, resulting in excess or defect of secretion, may be caused by processes which in the light of our present knowledge appear to be idiopathic; alterations brought about by particular diseases are much more easy to grasp, and a new chapter in pathology has recently been opened by certain discoveries regarding the affects of acute diseases on glandular tissue. Dubois showed that after inoculations with cultures of diphtheria and other diseases marked changes were found in the suprarenal glands. Langlois found after diphtheria inoculation that the suprarenal glands were hyperæmic, with diminution of the pressor action. Luksch ascertained, after injection of diphtheria cultures, that the pressor action of extracts from the suprarenal glands was wholly, or almost wholly, absent. Elliot discovered that exhaustion of the suprarenal glands is demonstrated by absence of the yellow staining action with bichromate salts, which was found within 36 hours of diphtheria poisoning. Rolleston suggested the employment of adrenalin to prevent heart failure in diphtheria, and Meyer also advocated its use in this disease.

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POSSIBILITY OF ALTERATIONS WITHOUT INTERVENTION OF GLANDULAR ACTIVITIES.

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Some of the changes in glandular activity, resulting in excess or defect of secretion, may be caused by processes which in the light of our present knowledge appear to be idiopathic; alterations brought about by particular diseases are much more easy to grasp, and a new chapter in pathology has recently been opened by certain discoveries regarding the affects of acute diseases on glandular tissue. Dubois showed that after inoculations with cultures of diphtheria and other diseases marked changes were found in the suprarenal glands. Langlois found after diphtheria inoculation that the suprarenal glands were hyperæmic, with diminution of the pressor action. Luksch ascertained, after injection of diphtheria cultures, that the pressor action of extracts from the suprarenal glands was wholly, or almost wholly, absent. Elliot discovered that exhaustion of the suprarenal glands is demonstrated by absence of the yellow staining action with bichromate salts, which was found within 36 hours of diphtheria poisoning. Rolleston suggested the employment of adrenalin to prevent heart failure in diphtheria, and Meyer also advocated its use in this disease.

James Ritchie and Ninian Bruce have found that many of the sudden deaths which occur in diphtheria and other acute infections are produced by profound changes in the suprarenal glands. After death from the experimental production of diphtheria by inoculation there is great swelling and hyperæmia of the suprarenal glands, and the medullary portion becomes completely exhausted of adrenalin. The exhaustion is complete in the less acute cases, while in the more acute there is very great diminution in the amount of adrenalin from a condition of relative suprarenal inadequacy. The presence or absence of adrenalin is easily shown by placing the fresh glands in a solution of potassium bichromate and formalin. If the medullary cells take on a yellow stain they contain adrenalin; they do not stain at all if adrenalin is absent. No other tissue in the body stains in this way, and the structures which thus react are appropriately termed "chromaffine cells" on account of this peculiar property. This exhaustion of the suprarenal glands is not specific for diphtheria toxæmia; it can also be produced by pneumococcal, streptococcal, staphylococcal, and other toxæmia. It may even be produced by any condition which throws prolonged strain upon the suprarenal gland.

In the lower vertebrates the cortex and medulla of the suprarenal bodies are separate organs. In birds they are irregularly mingled; in mammals alone does the cortex surround the medulla. The origin of the cortex and the medulla is of real import. The development of the medulla is very interesting and important. A very good description of this was furnished by Kohn. At an early stage small masses of cells are to be found on each side of the vertebral column. These cells are all identical. As they increase in size they suddenly divide into two different types. The one type grows slowly and develops into the ganglion cells of the sympathetic ganglia; the other develops more quickly, and shows the yellow staining reaction with bichromate solutions—that is, it assumes the character of "chromaffine tissue cells." The chromaffine cells and the sympathetic ganglion cells may thus be regarded as twins. The greater mass of these chromaffine cells atrophy after birth, but a few remain (1) in the midst of the sympathetic ganglia; (2) as separate masses, the accessory suprarenal bodies; (3) the largest mass remains and forms the medulla of the suprarenal glands; those in the cervical region form a small glandular mass known as the "carotid body." This manner of development is of profound significance in the relations of the suprarenal body and the sympathetic system. In a forthcoming work by Ninian Bruce, from which he has allowed me to quote, many of these interesting points will be found fully described.

IS THE INFLUENCE EXERTED THROUGH NERVES OR THROUGH CHEMICAL AGENCIES?

There can be no doubt that the effects produced upon the nutrition of the tissues must be through the intervention of the blood-vessels, but the further question arises, Is this influence exerted indirectly through nerves, or directly through chemical agencies? We know that the cervical, stellate, superior and inferior mesenteric ganglia may all be removed without death, and it is therefore clear that the tone of the cardio-vascular system does not necessarily depend upon an intact connexion with the sympathetic nervous system. This is universally admitted, and it must be regarded as the basis of all discussions connected with the relationship of the nervous, glandular, and circulatory apparatus. On the other hand, removal of the suprarenal glands proves fatal in 24 hours, and it is perfectly clear that, while life is not incompatible with destruction of much of the nervous control of the circulation, the removal of the structures which produce the chemical pressor substance is not compatible with life. We therefore believe the tone of the cardio-vascular mechanism to be influenced by two factors—nervous and chemical. Removal of the nervous factor is not fatal; removal of the chemical is. We are thus able to realise the full significance of exhaustion of the suprarenal glands in diphtheria, and can see how acute heart failure must be the consequence. The whole subject of glandular affections is rendered still more complex by certain cases in which they are associated together or pass one into another. Such an instance is to be found in the interesting patient described by Murray, labouring at once under acromegaly and exophthalmic goitre; an almost equally interesting case of my own, in which acromegaly was accompanied by myxœdematous features, belongs to the same category; other combinations of similar nature have been recorded and somewhat complicate the whole matter. We now know that it is not uncommon to find Graves's disease ending in myxœdema; this is comparatively easy to explain, since the increased functional activity of the thyroid gland leads in time to loss of function.

Such reflections bring us back to the point from which we started. Are we yet in a position to decide whether the messengers which carry the impulses to the vessels and the tissues are nervous or chemical? We have seen that certain vascular processes are only possible when the vasomotor nerves are intact, but this is qualified by the further fact referred to—that destruction of the great sympathetic ganglia does not of necessity involve complete loss of vascular tone. As the outcome of certain experiments we know that the action of hormones is direct. Kenneth Mackenzie has proved that the well-marked galactagogue

action obtained from the posterior lobe of the pituitary body and a few other structures is by means of the direct effect of hormones upon the mammary gland. That it is not through the direct influence of the nervous system is quite clear, and that the nervous influence upon mammary secretion, which is well recognised, is probably an indirect one, operating, not upon the gland through its nerves, but upon the organs which supply stimulant to the blood, is most probable.

The recent investigations of Ascoli and Legnani are of profound interest. These observers removed the pituitary gland from young puppies. In each case two puppies of the same size (as nearly as possible) were selected—one for experiment, the other for control. In many cases the puppies operated on died two or three days afterwards, but in the few that survived the results were remarkable. No further growth took place; the puppy remained a puppy. The size of the body, of the head, of the limbs, remained as at the time of the operation. Ossification and dentition were arrested; the bone not only ceased to grow, but showed defective nutrition; while the nourishment of the whole organism suffered, and the animal only gained in fat. Reproductive development was completely arrested, and changes were seen in the spleen, the thymus, the thyroid, and the suprarenals. Our understanding of the functions of the pituitary gland have been further extended recently by an interesting observation by Rennie, who describes a case of infantilism which was under his observation during three years, and in which it was found that an endothelioma had invaded the pituitary body, destroying the gland, so that very little of its proper structure remained. The patient was 16 years old—quite undeveloped, with effeminate voice and other features of infantilism. The arterial pressure seemed high, and there was some polyuria, with headache and vomiting. The diagnosis was of a chronic interstitial nephritis. Harvey Cushing has recorded cases of tumour compressing the pituitary gland, in which the symptoms were mainly renal, and chronic interstitial nephritis was suspected.

POSSIBILITY OF ALTERATIONS WITHOUT INTERVENTION OF GLANDULAR ACTIVITIES.

We have to admit that there are other possibilities of structural or functional alterations through the influence of chemical processes without the intervention of glandular activities. We are forced to allow such possibilities by the consideration that many glandular changes occur without apparent alteration of structure or function elsewhere. As an example of this let me mention that there are pituitary enlargements without acromegaly. Modifications in viscosity and alterations in osmosis cannot be neglected. It is indeed quite possible that growth is conditioned by the inherent tendencies of the part, and regulated by the special activities of the cells. Some of them become too large in size for the nourishment of their central protoplasm, and therefore it undergoes necrotic changes. Various perversions of ossification prove this. Again, the supply of nourishment for the cell may be deficient in quantity or poor in quality; while, again, it may be too great in amount or too rich in character. On the other hand, there may be divergences from the normal processes of removal, elimination being too active or too sluggish. As yet we know but little of the effects of such changes, yet they have been recognised through histological investigation. The consideration of this subject has led Geddes to believe that many of the changes found in the long series, beginning with achondroplasia at the one end and terminating in gigantism at the other, are brought about by alterations in the nitrogen content of the blood—probably arising from hepatic eccentricities. He has been led to think that the enlargement of the pituitary body in acromegaly is probably to be regarded as a protective process whereby there is an attempt to regulate the disturbances of the tissue changes. Simple arrest of development, whether ante-natal or post-natal, may be sufficient to produce dwarfism; and, on the other hand, accelerated development may in both phases of existence be the first impetus towards gigantism. Whether such effects are due to an inherent tendency implanted on the tissues, directly or indirectly through the glandular or nervous system, no man can yet say. At any period of life normal growth and decline may be interfered with by agencies either from without or from within. Alterations in the amount of nutriment; changes in powers of assimilation and elimination; the effects of microbes and toxins—all of these require our most careful consideration. The relative importance to be attributed to the different factors in maintaining the equilibration of the tissue processes is necessarily a subject still in its infancy, but none the less meriting our thoughts. The most interesting facts ascertained some years ago by Dixon as to the effects upon the circulation of extracts from the heart muscle in various conditions of rest and fatigue show how very powerful are the chemical influences at work in the regulation of function.

When we consider some of the arrangements by which the sympathetic system is linked up with the cerebro-spinal axis we can understand how profoundly the central nervous system may be affected by impulses from the periphery and how reciprocal influences are exerted. Let me mention that the grey rami communicantes appear from experimental work to be composed of fibres which take their origin in the vertebral ganglia of the sympathetic, and that these rami probably carry vasomotor impulses to the blood-vessels of the cord; we can grasp the profound significance of the connexion. The fibres of the grey rami seem, indeed, to be relay fibres on the outgoing vasomotor path, recurving backwards and carrying impulses to the vascular supply of the central nervous system. They are, therefore, recurrent, like the fibres described by Magendie as recurving and re-entering the cord with the anterior roots in order to supply the membranes of the cord with sensibility. Langley and Sherrington consider the fibres of the grey rami entirely post-ganglionic—that is, efferent from sympathetic ganglia, but intended for distribution to the cord vessels.

A paper of the greatest interest, by Elliott, appeared last week. Elliott has found that profound nervous influences, such as fright, produce very definite changes in suprarenal secretion. He is led to believe that the suprarenal glands are played upon by the splanchnic nerves in emotional reflexes with delicate adjustment.

THERAPEUTIC MEASURES.

Possibly some of my hearers may be inclined to regard the subject of these remarks as purely academic, and of no practical importance in the world of clinical medicine. There could not be a greater mistake. Every observation that has been cited to-day is of the highest value in the treatment of disease; and although our therapeutic measures are still characterised by unavoidable crudeness of means, there can be no doubt that the views of to-day are much more characterised by singleness of aim and simplicity of method than in any previous epoch of the world's history. It is probable that the art of therapeutics will remain for long one of the most difficult branches of scientific investigation. It is complicated by so many cross currents that absolute certainty is difficult of attainment. Many of our views depend on apparent analogies and indirect arguments. Let us for one moment look at the question of the action of drugs on vessels. Can we be certain that they act on muscle fibres directly, or through nerve endings indirectly? Adrenalin is believed to act on nerve endings, because it only, or mainly, causes contraction of vessels with sympathetic innervation, because it acts almost everywhere else where there are sympathetic nerve ends, and because it no longer contracts vessels after large amounts of ergotoxin, while stimulation of the vasomotor constrictor nerves loses effect at the same time. Digitalis, again, is held to act on muscle because it contracts muscles quite irrespective of the character of the nerves going to them, because it acts on many forms of muscle in large doses, and because it continues to contract vessels after ergotoxin has been given in quantities sufficient to prevent any adrenalin action or any effect from stimulation of the vaso-constrictor nerves. These questions involve what is after all simply a balance of probabilities, as is so clearly stated by Cushny.

Thyroid Inadequacy.

The employment of thyroid extract in myxœdema is, thanks to the work of Mackenzie, Murray, and many of their successors, so thoroughly established as to require no remark. The influence of this potent substance upon the nutrition of the body must be explained by its action as a hormone. Whether it acts directly upon glands and tissues or indirectly through the intervention of the nervous

system cannot at present be determined. Suffice it to say that it influences blood distribution and nutritive possibilities in the most powerful manner. From the practical point of view you will perhaps permit me, while passing by its obvious uses in clear cases of myxœdema and cretinism, to mention the invaluable service which may be obtained from thyroid extract in several conditions which are apt to miss our attention. Minor degrees of thyroid inadequacy are found about the climacteric period, or shortly afterwards. They are often mistaken for cardiac troubles, as they are attended in many instances by breathlessness and palpitation, bradycardia, and (less frequently) tachycardia. Such symptoms, along with slight increase in bulk, are misleading. It has been my fortune to see very many patients answering to this description, and to find that by the employment of extremely small doses of thyroid extract complete disappearance of all the disturbances was attained. In youth again it is common to find lack of growth in both sexes. Occasionally we find children, and, still more, youths, stunted in growth but excellent in form. One such will never, so long as memory lasts, leave the upper surface of my cerebral palimpsest. The son of one of my medical friends was, in his eighteenth year, 1 in. below 5 ft. in height. He had set his whole mind upon entering Woolwich, for which his one and only chance was just about six months ahead. The family turned to me in deep distress, as they felt that to obtain a growth of 4 in. in six months would be as great a feat as the addition of the proverbial cubit to the stature. By the employment of thyroid extract the youth grew 7 in. in six months, and, as he obtained one of the highest places in the entrance examination for Woolwich, it was obvious that his cerebral functions had been in nowise disturbed by the treatment. Several instances of the same sort—not, however, quite so dramatic—have been under my care; to be quite frank, it must nevertheless be confessed that in some of these boys and girls even thyroid treatment absolutely fails to produce the desired effect. Another class of patient in whom we find thyroid extract invaluable consists in children and youths who manifest mild myxœdematous features—they are not for a moment, however, to be regarded as cretinoid. In many of these young people, along with satisfactory growth as regards height, there is rather too much corporeal bulk and rather too little cerebral energy. Under thyroid treatment they become more slender, and the sluggishness of the intellectual processes entirely disappears. How these different conditions of hypothyroidism are brought about is often a complete mystery. The infections are in some cases responsible.

Suprarenal Extract in Graves's Disease.

Ever since the observations of Oliver and Schäfer upon the suprarenal glands, their substance has been employed by me as the most important remedy in the treatment of Graves's disease. Various mineral and vegetable substances have, in the past, been administered freely in this disease, and in more recent times the blood of dethyroidised goats has been largely used. This latter substance has in my hands, as in those of Murray, proved to be of about the same value as the *pulvis Olympicus* poured upon us by a racing car on a summer day. But in suprarenal extract we have an agent which may be stated fearlessly to have no rival in the management of this affection. Under its employment the rate of the pulse is reduced, the protrusion of the eyeballs disappears, the thyroid gland diminishes, the tremor, along with every other nervous symptom, vanishes, and the patient is restored to health in a way that we never see under any other method of treatment. No one who knows me will accuse me of aught but the most sympathetic attitude towards modern surgery; but this is one of the affections in which it is my duty solemnly to protest against the *furor operativus* which, in this condition, is in the overwhelming proportion of cases absolutely unjustifiable. It is surely far more scientific, as it is certainly much more successful, to trust to the chemical messenger, or hormone, which has the power of regulating the glandular activity responsible for so much of the clinical picture in Graves's disease, than to risk doubtful surgical adventures.

Pituitary Substance in Acromegaly, &c.

As to the treatment of acromegaly, we are still on the threshold of inquiry. In some early cases the use of pituitary substance has, in my own hands, been remarkably beneficial; even in later stages, although the effects have not been so striking, much relief has been obtained from a number of the subjective symptoms, while the general condition has been kept stationary. There are, however, many cases—and these are especially of the myxœdematous type already mentioned—in which the employment of thyroid substance furnishes the only means of amelioration. In those instances in which there are features suggestive of a concurrent Graves's disease, suprarenal substance (sometimes along with pituitary gland) is of real use. The action of the pituitary substance upon the blood-vessels has, by the way, since the researches of Oliver and Schäfer, helped us enormously in the treatment of certain conditions where the arterial pressure has a tendency to fall. In many instances of pneumonia and other acute diseases, apt to be accompanied by fatal fall of arterial pressure, the hormone obtained from the posterior lobe of the pituitary gland is of the greatest use. Did time permit, it would be a matter of the highest interest to point out that, during the menopause, many—sometimes all—of the troublesome symptoms then experienced may be removed, or at least relieved, by ovarian substance, while analogous effects are obtained during the corresponding period in men by didymin.

Suprarenal Substance.

The new conceptions of Addison's disease have, as has been already shown, greatly widened our knowledge of suprarenal functions. We recognise that, as the result of many factors, the suprarenal bodies may be deficient in function. It is certain that pyrexia, from the most varied causes, can abrogate the functions of these glands and bring about even fatal diminution of arterial pressure. In many of these conditions, thanks to the labours of those who have been specially referred to, we now recognise that the use of suprarenal substance, or of adrenalin, will bring about recovery, through supplying the necessary hormone, until the glands are able to resume their functions. In a very large number of affections, therefore, it is absolutely necessary to have recourse to such modern methods of treatment. Of an excess of suprarenal secretion we at present know little or nothing; but a suspicion, first voiced by Russell, that over-action of the suprarenal bodies may be responsible for certain cases of arterial degeneration must be referred to, and as the treatment of such cases by means of thyroid substance—largely antagonistic to suprarenal secretion—has been followed by excellent results, the suggestion appears to be well founded. The experimental production of arterial degeneration in rabbits by adrenalin is a matter requiring further research.

CONCLUDING REMARKS.

We sometimes speak of pharmacological diagnosis, meaning thereby that, knowing certain diseases to be amenable to particular remedies, we believe that our provisional conclusions are correct if the affections yield to the methods. But the therapeutic touchstone is sometimes misleading, inasmuch as our remedies produce effects over a much wider area than we may be inclined to dream of. This in itself shows the uncertainty attending our pharmacological investigations. When we further consider that the agents we employ may act directly or indirectly, we are led to admit that we are only, after all, dealing with fragmentary knowledge or "broken lights."

We have to put to ourselves the important question, How do these powerful agents produce the changes we have traced? We have seen that they act upon many, perhaps all, tissues. Some probably act on the local processes of renewal and removal, and others by their effects on the muscular wall of the vessels; certain undoubtedly act on the tissues, not directly or even by modifying the vessels, but through the sympathetic system. It seems probable that they invoke nervous influences, consisting in waves of molecular disturbance, which bring about changes by liberation or inhibition. The recent work of Elliott, previously referred to, supports this view. The results of these interesting advances must enhance our hopes of even more valuable additions to our knowledge, theoretical and practical, at a date not far distant. Their consideration opens a vista of infinite possibilities in the explanation of normal functions, the comprehension of morbid processes, and the management of diseased conditions. We are still groping after solid facts in the dusky twilight of the dawn, but we doubt not that the brighter

radiance of the day will reveal much that is now hidden from our eyes. All that we can now know, all that we can now do, is the result of modern methods of investigation. Led by the whole trend of our education to set a high value on all honest work that explains the scientific problems and assists the practical treatment of disease, the results obtained by devotion to the three sister studies—physiology, pathology, and pharmacology—are to us of paramount importance. It is not given to us all in equal measure to contribute to the advance of knowledge; we, as clinicians, gladly avail ourselves of the labours of those devoted men who illuminate many vexed questions by their experimental researches.

We are like children on a beach of shifting sands; successive tides mould the form of the shore, gradually washing away, but as steadily building up, the coast of the future. So it is with ourselves; with the constant movement of thought, and the alternate advance and retreat of opinion, there are incessant changes. Contemplating these fluctuations, we are sometimes inclined to be impatient, and to wonder whether, after all, there is a real constructive movement. But science, ever young, looks with the open eyes of Hope and Faith into the future; and those of us who can possess our souls in patience, trusting her methods, feel the assurance of greater conquests ere long. Recognising that we live in an age of magnificent achievement, we shall be able, if there be any tendency to disappointment, to say:

Shall we not take the ebb, who had the flow?

For some of us the curfew of life will soon quiver upon the evening air. It is of the very essence of our being to experience a sense of unfulfilment; to feel that we have, at least in some degree, been unprofitable servants. But if we have been faithful to our beliefs, and steadfast in our labours, we shall escape the bitter regret of wasted hours and unused opportunities, and we shall enjoy the satisfaction of knowing that, to the best of our powers, we have attempted to extend the knowledge and increase the welfare of mankind. Even if we may not witness in our own time the ends for which we have struggled, we shall have the consoling prospect that our successors will behold what we have longed to see. In the meantime, let us, in all our doings, walk along the path of safety, through accurate observation, and unprejudiced investigation, wielding fearlessly the spear of Ithuriel in defence of eternal truth.

CHARING CROSS HOSPITAL.—On account of the extreme urgency for meeting the annual deficit of £6000, the council of Charing Cross Hospital has issued a memorandum bringing to the notice of resident firms and institutions in the neighbourhood served by the hospital the needs of the charity and the efforts that have been made to meet those needs since 1905, when the responsibilities of the present management commenced. The hospital serves a large poverty-stricken area situated in the middle of one of the richest districts of London, and this appeal to join in a guarantee fund deserves and ought to receive a generous response.

ROYAL HOSPITAL OF LONDON SCHOOL OF DENTAL SURGERY.—A series of post-graduate lectures in connexion with this school is announced for the months of October and November next. The lectures will be delivered on Tuesdays, at 6 P.M., the following being the dates, the subjects, and the names of the lecturers: Oct. 15th, "Lines of Demarcation between Retention and Extraction of Teeth in an Unclean Mouth," Mr. W. W. James; 22nd, "Treatment of Root Canals," Mr. James; 29th, "The Rendering (apart from Extraction) of an Unclean Mouth Cleanable by the Patient's Daily Attention," Mr. Douglas Gabell; Nov. 5th, "The Maintenance of a Healthy Mouth in a Clean State," Dr. H. W. C. Austen; 12th, "The Use and Abuse of Gauze or Wool Dressings in the Treatment of Wounds of the Mouth," Mr. F. Coleman; 19th, "Diseases of the Mouth and Associated Parts with Relation to Septic Conditions of the Teeth and Jaws," Mr. R. McKay; and 26th, "Malocclusion of the Deciduous Dentition," Dr. N. G. Bennett. The fee for the course is £2 2s., but past and present students of the hospital and internal students of the University of London will be admitted free

Address in Surgery

ON

PERSONAL EXPERIENCES IN THE SURGERY OF THE LARGE BOWEL.

Delivered at the Eightieth Annual Meeting of the British Medical Association,

BY F. T. PAUL, CH.M. LIVERP., F.R.C.S. ENG.,
CONSULTING SURGEON, LIVERPOOL ROYAL INFIRMARY.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—When the committee of the British Medical Association did me the honour to invite me to give the Address in Surgery at this meeting in Liverpool, I at once decided that it would come more within the scope of my powers to ask your kind attention to a record of some of my actual experiences rather than to attempt a more general address. Owing to the immense impetus surgery has received since new fields were opened to us by the beneficent influence of the late Lord Lister's work there is but little ground in the whole range of practical surgery which has not been recently covered by men in the forefront of our profession; but each surgeon evolves personal plans and details in his endeavour to attain success, and it is by comparing notes amongst those with good experience that we may best hope to advance our knowledge and raise the standard of our results. After carefully thinking over the various branches of surgery in which it has been my lot to meet with fairly numerous cases, I came to the conclusion that I would offer you my experiences in the surgery of the large bowel. This would be too wide a subject for a single address if one proposed to travel over the whole range of surgical troubles in this region; but by limiting my remarks to those procedures in which some advance has been made during recent years, and of which I have had a fair personal experience, I hope to keep this address within reasonable limits. This will restrict me to the consideration of cases in which the following operations have been employed: (1) colotomy; (2) short-circuiting; (3) colectomy; and (4) excision of the rectum.

CANCER OF THE BOWEL.

These operations are needed to meet very different pathological conditions, though most of them ultimately present the clinical feature of obstruction. One alone, however, cancer, accounts for more than all the rest put together, and therefore the greater part of my remarks will be concerned with cases of malignant disease—a disease which in the alimentary canal usually first threatens life by mechanically interfering with its functions. We need therefore to consider each case from the two sides, mechanical and pathological, and often it is necessary to direct our treatment to the relief of the mechanical obstruction before we can attempt a cure for the malignant growth. But whether we design to give relief only or to try to obtain a permanent cure, the selection of a particular operation is not merely a matter of clinical experience. The underlying malignancy and the pathological problems involved by it must not be lost sight of, and especially must we take into consideration the varying degrees in malignancy exhibited by cancerous growths in the bowel. On this rests the expectation of life in most of our patients when proper steps are taken to avoid a fatal issue by stenosis. We trust to our surgical instinct, combined with careful clinical investigation into the patient's constitutional condition, to guide us as to his fitness to bear an operation of a certain magnitude, but we must rely entirely on information obtained from pathological sources in estimating the real value of the operation and frequently in deciding its limits. Of what use is it to submit a patient to a long and dangerous operation if his prospect of life on frecovering from it is little better than he would have obtained by a simple colotomy? Or, again, why undertake an extensive excision of mesentery for the removal of glands which in all probability are not infected? It is therefore of paramount importance that surgeons should familiarise themselves with the characters of the different kinds of cancer met with in various parts of the body, as so much

depends upon the behaviour to be expected from each kind. This is especially true of intestinal cancer. In no other part of the body is there a greater variation in the degree of malignancy than in the bowel.

Spontaneous Cure of Cancer.

In the first place I am quite convinced that cancer of the bowel may undergo spontaneous cure. It is much more easy to make a statement like this than to prove it, and I doubt if I can offer any really convincing proof. The following are the grounds on which the assertion rests:—1. For over 30 years I have been removing these growths and submitting them to personal microscopic investigation. I am, therefore, very familiar with their nature and appearance. 2. Many cases having the minute structure of cancer have not recurred, though known to have been removed with an insufficient margin of safety. 3. Malignant disease of the bowel is very rarely removed during the early stage, yet the percentage of cures is remarkably good. 4. The duration of life after colotomy for inoperable cancer of the bowel is often prolonged compared with that in other inoperable cancer cases, whilst a proportion of the cases seen, handled, and passed as malignant get well and the tumour disappears. Last year I had five cases under observation at the same time, in all of which I had done a laparotomy during the previous seven years and given the opinion that the patients had inoperable cancer—one of the cæcum, four of the iliac and pelvic colon. Yet all appeared to have recovered. In bowel cancer the relative malignancy appears to depend more upon the seed than the soil. Equally good results may be obtained in young and well-nourished subjects as in older people; but fairly constant conditions are found to be associated with each different variety of growth. There are three chief kinds of carcinoma and a few of sarcoma, the latter being rare, and always of malignant type.

Varieties of Cancer of the Bowel.

The three varieties of carcinoma are: (1) the large soft fungating "encephaloid" type; (2) the small hard "scirrhous" type; and (3) the infiltrating "colloid" type. All may be said to be primarily columnar-celled growths originating in the intestinal glands, and all ulcerate; but they follow different paths of evolution, and attain different degrees of malignancy which it is important to recognise. The scirrhous variety is always unmistakeable. It produces the hard ring stricture of the bowel, and is more common than colloid cancer, but much less frequent than the soft fungating type. This latter may usually be as easily distinguished from the colloid form of growth by the following characters: It is softer to the touch. There is a good deal of fungating growth within the bowel, but generally not much solid infiltration of the bowel wall. There are usually numerous large soft glands in the neighbouring mesentery, which are septic and not malignant. In colloid cancer, on the other hand, there is a hard-edged ulcer with no fungation. There is dense hard infiltration of the bowel wall, often attaining a thickness of from one to two inches, and giving it a solid feel. The glands, if infected, are not soft, but hard and glistening.

Misconceptions Regarding Cancer.

Misconceptions exist regarding the nature of these different tumours. In the first place, some seem to forget that "scirrhous" and "encephaloid" are merely terms of clinical or macroscopic significance, convenient when properly used, but otherwise very misleading. Almost any histological variety of cancer may take on either character without change of cell type. Even in the breast scirrhus does not imply acinous growth, as either round-celled acinous cancer or columnar-celled duct cancer may present this clinical feature. Some speak and write as though the term "scirrhous" was equivalent to mammary cancer, and consequently that a scirrhous type of cancer in the bowel means a cancer histologically resembling breast cancer; whereas no form of bowel cancer could be identical with a breast growth any more than bowel and mammary tissue could be identical. They may, and do, present similar clinical characteristics, and a hard ring stricture of the colon resembles a breast scirrhus, or a thyroid scirrhus, or any other scirrhus in its hardness, in its tendency to cell degeneration, to slow but inveterate growth, to lymphatic infection, and difficulty in complete eradication, but histologically its affinity is to columnar-celled mucous-secreting epithelium and not to the specific gland tissue of the breast.

The really important misconception, however, concerns the relative malignancy of the three varieties of cancer. Usually the big, fungating, encephaloid type of growth is regarded as the most malignant; the colloid as being intermediate, and the scirrhous, or ring stricture, as the most benign. This arrangement is entirely wrong and out of accord with clinical experience. The colloid is the most malignant type, the ring stricture comes next, and the fungating type is the best—it being one of the least malignant kinds of cancer met with in the body.

It is a clinical fact of considerable importance, to which I have often referred at our local medical society, that the up-growing forms of cancer are essentially less malignant than the down-growing, ulcerating, and shrinking types. Take as examples fungating epithelioma of a warty or cauliflower character on the tongue, larynx, or skin, and compare with much smaller but more infiltrating and ulcerating growths in the same positions. Surely our operation results have always been better, far better, in the former than the latter. Again, in breast cases, take the case of a soft encephaloid looking duct cancer, and compare with a small infiltrating, shrinking scirrhus. The duct cancer, notwithstanding its malignant appearance, will often yield an operation cure, whilst the little simple looking scirrhus turns up again in skin, glands, or internal organs. The duct cancer belongs to the up-growing papillomatous class, whilst the scirrhus infiltrates, degenerates, and ulcerates. Papillomatous and villous growths are on the borderline between innocence and malignancy. On the skin they are for the most part quite innocent. In the mouth or larynx we regard them with more suspicion. In the bladder they show a still worse tendency, and in the bowel I doubt if they can be called innocent at all. The familiar rectal polypus is adenomatous or glandular, rather than warty; but there are true papillomata apart from the polypi, and it is these which should always be regarded with grave suspicion.

Histology of Bowel Cancer.

The large, soft, columnar-celled cancer of the bowel apparently usually begins as a down-growth from the Lieberkühn's follicles, or, rather, we assume that it does, since it shows that appearance at the growing margin of an old malignant ulcer, which may be quite a different matter. But it is certain that in some cases the first growth is an up-growth of papillomatous type, and occasionally this up-growth attains considerable dimensions before any truly malignant down-growth occurs. The latter always presents cells of a cancerous type from the first, but the former have an innocent appearance, and at most could only be regarded as precancerous. Fig. 1 shows the ordinary microscopical picture of columnar-celled cancer of the bowel, whilst Fig. 2 is photographed from a section of a large soft rectal growth which was mainly villous in type; but it had already taken on infiltrating characters, and though removed it recurred and was fatal. An earlier operation would undoubtedly have been quite successful.

The soft columnar-celled growths attain a higher degree of evolution than the scirrhous or colloid kinds. The cells are long, regularly arranged, and evidently functional. Owing no doubt to the high development attained by them, this form of cancer degenerates slowly, and so produces a bulky growth, and at the same time one which shows but little tendency to disseminate. In the colon it is rather the exception than the rule to meet with infected glands, though they are constantly enlarged from septic absorption. In the rectum gland infection is more frequent, though the characters of the primary growth have little to distinguish them from similar tumours in the colon. The fungating form of cancer is not only the least malignant, but, fortunately, also the most common variety met with in the bowel.

We have no knowledge of either the colloid or scirrhous growths in villous form, and it may be safely assumed that they always originate as down-growths from the intestinal glands. In colloid cancer the columnar character of the cells is quickly lost, and the highly infiltrating nature of the growth is evident. The older parts undergo a complete colloid change, rendering the appearance almost structureless; but at the growing margin and in all the

FIG. 1.

FIG. 2.

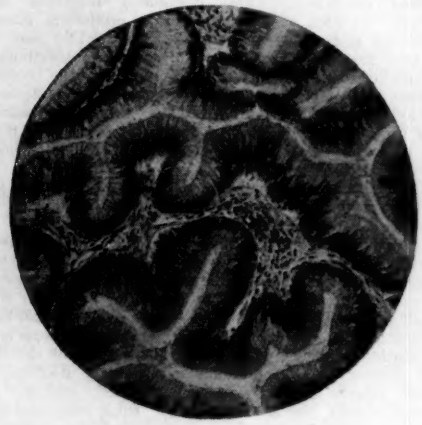


FIG. 3.

FIG. 4.

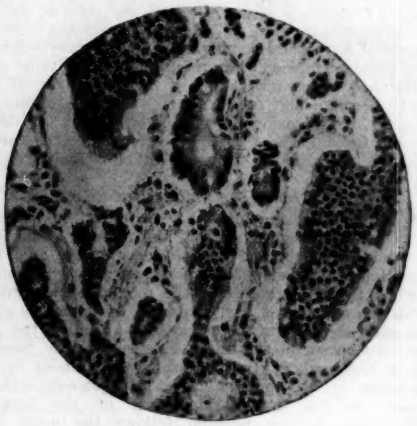


FIG. 5.

DESCRIPTION OF ILLUSTRATIONS.

FIG. 1.—Ordinary microscopical picture of columnar-celled cancer of bowel.

FIG. 2.—Section of rectal growth mainly villous in type.

FIG. 3.—Section of colloid cancer showing infiltrating nature.

FIG. 4.—Scirrhous cancer with round-celled characters.

FIG. 5.—Epithelioma of rectum.

neighbouring lymph spaces large free cells are seen, rounded in outline, and filled with the characteristic colloid substance. The lymphatic infection rapidly spreads to both vessels and glands, producing glistening networks and masses of colloid tissue. The peritoneum is also frequently invaded. A very wide distribution of colloid cancer may take place through the lymphatic system, even in distant organs, but I have never seen it carried by the blood-vessels. The infiltrating nature of this type of growth is well shown in any section through the muscular coats of the bowel in the neighbourhood of a colloid ulcer (Fig. 3).

The scirrhous variety bears a closer resemblance to the ordinary type of bowel cancer. The stroma is more abundant and more fibrous. The cells are smaller. They frequently retain the columnar type, but are much less pronounced, and not rarely assume characters difficult to distinguish from spheroidal-celled growths. The cells degenerate before attaining the degree of glandular evolution characterising the soft growths, thus explaining the small bulk of tumour growth in a ring stricture. But they possess marked infiltrating qualities, penetrating all the coats of the bowel, and dotting the peritoneum with shotty nodules. The lymph glands gradually become infected, and not rarely distant organs like the liver also. Ring strictures are not rapidly malignant; but they possess a slow and sure grip, and unfortunately recurrence is more the rule than the exception after excision.

Histologically, most ring strictures present a columnar-celled structure; but some, as in Fig. 4, almost at once take on round-celled characters. In this specimen, though the general appearance is round-celled, the cells at the margin of the growth are seen to be directly replacing those of the glands of the mucous membrane, and in many deeper parts they show a tendency to form imperfect gland tubes again.

The most common sites for the fungating type of growth are the rectum and cæcum, though it often occurs in the sigmoid, and occasionally at any other part of the large bowel. Colloid cancer chiefly selects the rectum, and ring stricture the sigmoid, though neither is limited to these regions.

Epithelioma of the Rectum.

A short reference must be made to the presence of squamous-celled epithelioma in the rectum. This form of growth is often supposed only to occur at the anal margin or on the skin surface; but I have met with five or six cases in which it has originated in the rectum about two inches above the anus. All have occurred in women, and when seen early enough for the point to be decided, the growth has commenced on the anterior aspect of the bowel, but not in the vagina. In such cases the tumour no doubt originates in an embryonic rest of squamous-celled epithelium in the mucous membrane of the lower gut. Epithelioma in this position follows the usual course, showing the same tendency to gland infection and local recurrence that it does in other parts of the body. Histologically, the individual cells are smaller and the "nest-cells" less pronounced than in skin growths (see Fig. 5). Quite a contrast to the true anal epithelioma in which the cells are large and horny.

SARCOMA OF THE BOWEL.

Sarcoma of the large bowel in my practice has been very rare. Some years ago I had a case of small round-celled sarcoma of the rectum in a woman, aged 50, at the Royal Infirmary. It formed a spindle-shaped tumour of the middle third, stricturing the bowel without ulceration, and was recognisable as a sarcoma before microscopical examination. It was excised, but recurred, and the recurrence was fatal within a year. Recently, in private practice, I met with one of those rare examples of melanotic sarcoma of the rectum. It formed a small fungating tumour low down on the posterior wall in a male aged 70. He was not a suitable subject for a radical operation, and did not live long, for the growth proved to be very malignant, and was rapidly and widely disseminated. I do not refer to one or two cases of congenital malignant growth that I have seen in connexion with the rectum, as they have no bearing on the matter in hand.

INFLUENCE OF PATHOLOGY ON SURGERY.

If a surgeon when operating takes the foregoing pathological details into consideration they will often influence him considerably in his decision as to the nature and extent of the operation. Thus, if the growth be of the fungating type, recognised by its softness, bulk, situation, character of gland infection, &c., he would, on the one hand, feel justified in removing the tumour without necessarily interfering with any tissue much beyond the visibly affected area; or, on the other hand, if the risk to life seemed too great to allow of this being done, he would be encouraged to hope for a reasonably long period of relief by short-circuiting or colotomy. If the tumour prove to be massive and solid, and especially if there be evident glistening gland or peritoneal infection, or if the growth be in the rectum and can be felt as an abrupt hard-edged ulcer without fungation, then the case is one of colloid cancer, and the outlook would be recognised as discouraging. When a wide and thorough removal appeared warranted it might be undertaken; but as the prospect is never good in colloid cancer, either for excision or temporary measures, less risks to life should be accepted. In the case of ring strictures, always easily recognisable, the indication is to excise more widely than one used to think necessary, and to remember that it is in this type of growth we have the best reasons for following up the path of lymphatic infection.

These rules for my guidance have come to me gradually as the result of practical experience. The first case in which my eyes were opened to the true nature of the large, soft glands so frequently seen in association with fungating cancer of the bowel occurred about 12 years ago. I had removed the cæcum for a growth of this type from a man, aged 37, and knowing that I had left several enlarged glands behind gave a bad prognosis. A year later he was so well that I was persuaded to try and complete the cure by removing anything that might have grown since. On reopening the abdomen all the glands were found to have disappeared. The patient is still living and free from recurrence. This case occurred before those included in the table. Of course, a systematic examination of the glands would have at once afforded the information required, and when one recalls that this is barely 12 years ago, one is struck with the changes and facilities which have come about since. There were no clinical research associations then, and I had to cut all my own sections because I could not get them done to my satisfaction elsewhere. It too frequently happened that though I would cut a section of the primary growth to determine its nature, I would judge the glands on their naked-eye features. After this Dr. Ernest Glynn, now our professor in pathology, undertook to investigate this type of gland for me. He soon showed that however large they might be, the increase in size was very rarely due to secondary growth, but was owing to microbic infection derived from the foul ulcer. In the ring stricture exactly the reverse holds good; microbic infection is slight and unnoticeable, but cancerous deposits are frequent, even though the glands may be very small. In colloid cancer as met in the bowel the glands seem to be almost constantly infected with the growth.

CLINICAL FEATURES.

Having dealt with the influence of pathology in guiding us as to the nature and extent of an operation undertaken for the cure or relief of malignant disease of the bowel, I must next say a few words regarding the clinical details which bear upon the same point. The first great line of demarcation in the clinical arrangement of these cases is the presence or absence of complete obstruction at the time they come under a surgeon's observation. In all my earlier experiences, say from 1878 to 1890 or later, complete obstruction with fæcal vomiting and meteorism were regarded as necessary preliminaries to an application for surgical aid, and one soon found that any attempt to relieve the obstruction which did not provide for an immediate external escape of the locked-up contents of the bowel was doomed to failure. So constantly fatal were all operations for intestinal obstruction in those days through delay that one thought very little of the objections to an artificial anus. It was a great event to save life at any cost. Nor should any such feeling of objection encourage us now to risk life for the sake of at once accomplishing a neat and clean surgical procedure. Even short-circuiting seems often to fail when colotomy is at once successful, and I feel sure that whenever there is complete obstruction in the colon a preliminary colotomy is by far the safest course in all those cases in

which any form of internal strangulation can be excluded. The one class of case in which I should always wish to make an exception whenever possible is when the obstruction is actually at the ileo-cæcal valve, and it is necessary to open the small bowel. There are such decided objections to a fæcal fistula connected with the small intestine, and usually such favourable prospects for short-circuiting in this situation, that the additional immediate risk may be accepted unless paresis and collapse have already supervened, when an artificial anus is imperative.

Recognition of Cancer of the Bowel.

Unfortunately we are still without means for recognising cancer of the bowel in its really early stages. In fact, it sets up no symptoms at this period of its growth which would lead a patient to consult his doctor, except when low down in the rectum. Here it excites irritability, and attracts attention by the presence of blood and mucus, and so often allows an early diagnosis; but higher up we have almost invariably to wait until the growth has begun to impede the passage of fæces before the patient is sufficiently alarmed to seek advice. Large ulcers without marked obstruction are chiefly characterised by intestinal toxæmia, with elevation of temperature, flatulent dyspepsia, loss of flesh, irregular colic with constipation or diarrhœa and mucus and blood in the motions—visible when the growth is low down, occult when higher up. A tumour may frequently be felt. The ring stricture usually causes less disturbance to the general health, but more colic and more obstruction. An X ray screen view of the behaviour of a bismuth meal is useful if its limitations are recognised. It may inform us as to the site and the amount of constriction, though in regard to the latter atony or tonicity of the bowel must be taken into consideration. In no circumstances can it indicate either the extent or the malignancy of the growth, nor can the ready passage of a bismuth meal be regarded as a contra-indication to operation. If the disease is within the reach of the sigmoidoscope this instrument may be of considerable assistance in the diagnosis of growths situated in the pelvic colon, where they frequently escape touch when examined either by the rectum or the abdomen.

When complete obstruction occurs the disease is most frequently situated in the pelvic or iliac colon, but tight strictures are possible in all parts of the large bowel, even in the cæcum. The sudden onset of the final attack of obstruction is not due to any increase in the stricture, but to blockage by some indigestible substance which has been swallowed, and it is remarkable how many patients deny previous symptoms of chronic obstruction. I think that some colic and irregularity must always precede a constriction that can be plugged by an orange pip, but it is not always observed, and I have several times operated upon patients, particularly of the hospital class, who have denied all but the slightest symptoms, though I have found marked hypertrophy of the bowel above the stricture. Much depends upon the natural habit of bowels. Those with a tonic habit get diarrhœa as a result of incomplete obstruction, whilst the atonic type suffer from increased constipation, which they accept as a variation of their normal condition. In the former the site of the stricture is usually readily discovered, as peristalsis is so easily set up in the irritable hypertrophied bowel, and can be traced up to the growth.

Complete obstruction in the lower regions of the alimentary canal is soon accompanied by meteorism. When this occurs, the parts most easy to recognise are the rounded mass of the cæcum, the rope-like coils of small bowel, and sometimes the enormous distension of a twisted sigmoid. If the site of an obstruction is not rendered apparent by other means, the behaviour of an enema may give useful information. When it is in the sigmoid region the bowel is irritable, and rarely tolerates more than half a pint, which is rapidly returned. When higher up much more may be injected and retained.

COLOTOMY FOR OBSTRUCTION.

If the patient when seen is completely obstructed, the abdomen distended, and the general condition bad, it is clear that the simplest form of relief is the most likely to be successful. In such a case abdominal exploration is easily fatal, and a colotomy may be just as easily successful. I have very rarely gone wrong in doing a colotomy under such circumstances. The most serious failure was in not recognising a twist of the sigmoid in a case which occurred several years ago. I have now had five of these cases. This man and a boy, aged 11, died without relief. In the other three—one man and two women—I excised the bowel, and they all recovered. Cases of volvulus of the sigmoid usually give an old history of very difficult constipation, with attacks of partial or complete obstruction, from which they have spontaneously recovered. The final attack is sudden in its onset, accompanied by severe pain, rapid distension, often attaining unusual dimensions, and if not soon relieved dangerous symptoms supervene, due to gangrene of the bowel. The higher up and the more extensive the twist the more rapid and marked the collapse. Age, condition, and history will often distinguish the case from one of malignant stricture, but whenever there remains doubt as to the possibility of internal strangulation being mistaken for cancer exploration is, of course, essential. But in all cases of complete obstruction of the large bowel, whether diagnosed by exploration or otherwise, and in which strangulation is absent, I advise treatment by colotomy in the first instance in preference to an internal operation. It is immensely less dangerous, and it distinctly lessens the risks of the latter when undertaken after a suitable interval. The only drawback to a colotomy under such circumstances is the increased time occupied before the whole proceeding can be completed and the necessity for two, or perhaps three, operations in place of one; but since the one would very often be fatal, and the two or three very rarely so, our patients would infinitely prefer the latter course if they understood the whole circumstance.

Having decided upon a colotomy where should the bowel be opened? I used to say the lower the opening the better, and for a permanent operation this is generally true. But we are discussing a temporary proceeding. The patient is distended, very ill, perhaps old. Probably we do not know exactly where the stricture is, except that it is below the cæcum, and anyway, we hope that later on we shall be able to open a flat abdomen and comparatively easily remove the obstruction. Always then, I think, we should decide on a right lumbar operation. It is safe, satisfactory, and out of the way of the future abdominal section. I have now carried out this procedure on many occasions in private as well as hospital practice, and the more experience I have of it the more favourably it appeals to me.

The Operation of Colotomy.

Colotomy was a popular operation when I joined the ranks of surgery. This was before Reeves revived Littré's iliac operation, so that which was done was always Amussat's left or right transverse lumbar operation. Very rarely indeed a Littré might be attempted in cases of imperforate anus. When it was, it was almost always fatal. In 1882, four years after I became a hospital surgeon, Mr. H. A. Reeves, of the London Hospital, advocated a return to the original iliac operation for adults. His view gained support, and after Mr. Harrison Cripps's carefully planned operation was published in 1889 lumbar colotomy rapidly lost favour, and soon apparently passed almost entirely out of notice. In 1890 I recommended the use of the glass intestinal drainage-tube as an adjunct to iliac colotomy, and for many years used it in this connexion. Fifteen years ago about 85 per cent. of my colotomies were anterior; but since then I have made more and more use of the lumbar operation, particularly on the right side.

Of all the possible sites which may be selected for opening the colon there are only two of any great practical value, left iliac and right lumbar. The left lumbar operation has its uses, though they are not great, and transverse colotomy may occasionally be desirable. Cæcostomy is always an abomination. It is bad from every point of view, except that sometimes it may be said to be absolutely necessary. There is nothing to be said specially against transverse colotomy, but the right lumbar operation gives equal relief, and does not complicate a subsequent abdominal section. Whenever a colotomy is expected to be permanent, and the seat of the obstruction permits, the left iliac operation should be selected. This operation is *per se* free from danger, and yields the best results obtainable. When the patient is very old and exhausted, and in the late stages of obstruction, a lumbar operation in my judgment, when done with a small incision, is less dangerous than an anterior operation. If such

a patient dies death usually results, not from the operation, but from the continued collapse consequent upon obstruction; but when the operation itself is fatal, death occurs about five days later, owing to failure of the union between the bowel and the parietes. Such failure does not seriously affect an extraperitoneal operation, and hence the lumbar operation has this added safety in old and exhausted subjects. This is almost the only advantage in retaining the left lumbar colotomy. Transverse colotomy, as just stated, is practically unnecessary and very rarely desirable. Right lumbar colotomy, on the other hand, has a wide field for useful application as a means for affording temporary relief in cases of complete obstruction of the colon below the cæcum, and as a valuable method of treating certain cases of inflammation and ulceration of the colon.

As regards the technique of these operations, the simpler they are made the better. As in gastro-enterostomy our plates, buttons, and bobbins served to teach us how to do a plain suturing operation properly, so in colotomy one knows now that all we need is to plan and suture well, and the result will be the best. For the past five years or more I have used no mechanical appliance for iliac colotomy. A small oblique incision, from 1½ in. to 2 in. long, is made outside the rectus muscle over the iliac colon. Through this the bowel is picked up and passed along until the highest part available is reached. A small loop is then drawn out of the wound, grasped with Kocher's forceps, and held in position by an assistant whilst the surgeon fixes it with a continuous Lembert suture of fine green sulpho-chromic gut to the parietal peritoneum and deep aponeurosis (Fig. 6). Having done this, the convexity of the loop is cut off with scissors little by little, suturing the bowel as it is cut to the skin with a hæmostatic buttonhole stitch, still using the green gut (Fig. 7). In this way the wound is contracted so as to provide an opening not exceeding 1 in. to 1¼ in. Too much of the convexity of the bowel should not be cut away. A complete spur with a double-barrelled opening is not desirable. This gives a moist, patulous orifice, with a liability to prolapse, one in which fæcal discharges are difficult to control. There should be only one orifice, large enough to comfortably admit a finger, and with a tendency to contract rather than to evert if the patient is to experience comfort with it. Such an artificial anus is incompatible with a complete spur at first; but as time goes on the spur improves naturally by the wasting of the distal part, and in time becomes perfect. For many years I have recommended a simple mushroom-shaped aluminium plug to be used in conjunction with iliac colotomy. (Fig. 8.) It is retained in position by a pad of wool and a detached belt. This still appears to me to be the most efficient form of support and the most useful help towards control, and my patients always use it.

Right lumbar colotomy is now shorn of its terrors by greater familiarity with abdominal operations. When the colon is distended it is easily found on either side. When not distended the peritoneal cavity may, if necessary, be opened for exploration and closed again with but slight detriment to the patient. I always suture the bowel to the skin, as in iliac colotomy, and very rarely attempt to make a spur since the lumbar operation is almost invariably a temporary measure to be done away with as soon as it safely can be. The disability resulting from an iliac colotomy is not nearly so great as is so often assumed. If it were, the operation would be robbed of three-fourths of its value. When a satisfactory surgical result has been obtained it only needs a little pluck and a desire to make the best of a disadvantage for any ordinary patient to continue to lead a useful life. I have known a doctor to continue the full work of a general practitioner for years, a ship steward to follow his avocation on a big Cunarder, and a lady with this disability for life to continue to make a charming hostess and to be the brightest member of her family. With these and many similar examples within my experience I cannot sympathise with the weak-spirited individual who sinks under the misfortune of such a personal discomfort.

As I have already said, the operation of colotomy is practically free from danger, though the conditions for which it has to be undertaken often seriously threaten life, and occasion some *post hoc* fatalities. The only deaths I have met with for some years have been due to obstruction and not to operation. In some of these fatal cases, I think, perforation, which is not very rare in the late stages of malignant stricture, may have been present. Especially in the old and feeble the paresis, meteorism, and vomiting really due to perforation, are sometimes accredited to obstruction, and a futile colotomy undertaken. There ought to be no mortality from colotomy in the case of patients in a general condition of health suitable for the operation and under 65 years of age.

Results of Colotomy.

I have gathered together in a small table such results as appear to me to be interesting and important in those of my cases of colotomy which have been done during the last ten years in private practice. I should have preferred to include the much larger number of hospital patients undertaken during the same years, about three to one, but found it impossible to follow them up satisfactorily. These fairly reflect my experience, and I consider that a small group of cases in which the subsequent history of all is known is far more reliable than a large group in which there must of necessity be many gaps. As the table shows, I have done colotomy upon 68 patients in private practice during the past ten years. In 44 of these there was no obstruction, or it was chronic in type, and all recovered. In 24 acute obstruction was present, and 9 deaths occurred. These were mostly in old people with vomiting (often fæcal), meteorism, and collapse. It is interesting to note that 18 of the cases of complete obstruction were met with during the first period of five years, and accounted for 7 of the 9 deaths; whilst in the remaining period there were only 6 cases with 2 deaths, showing that practitioners are recognising the importance of earlier surgical treatment. Other points of interest in the table are that right lumbar colotomy accounts for one-fourth of the total number, that cancer of the rectum was the primary trouble in half the cases, and that my statement as to the long duration of life after colotomy for cancer is borne out.

Summary of colotomy cases.—All cases operated on in private practice, 1901 to 1911: 68 cases; 37 males, 31 females.
Mortality.—Acute obstruction, 24 cases, 9 deaths; without obstruction, 44 cases, no deaths.
1901–06: 33 cases; 18 obstruction, 7 deaths.
1907–11: 35 cases; 6 obstruction, 2 deaths.
Operation.—Iliac 48, right lumbar 17, transverse 2, cæcostomy 1.
Disease.—Cancer of rectum 34, sigmoid 15, colon 4, prostate 1, uterus 1, inflammatory 4, cause unknown (chiefly malignant) 9.
Age of cancer cases.—Under 30, 1; 30–40, 4; 40–50, 8; 50–60, 23 60–70, 20; 70–80, 8.
Life after operation.—Non-malignant, 4; all living, 5, 6, 8, and 10 years. Malignant, 64; 10 living at 8 months, 16 months, 1½, 2¼, 2¼, 3½, 4½, 7½, 10, 10 years. Malignant, since dead, 54: early, from obstruction, 9; from other causes, 3; recurrence under 1 year, 25; recurrence under 2 years, 8; recurrence under 3 years, 6; recurrence under 4 years, 2; recurrence under 10 years, 1.

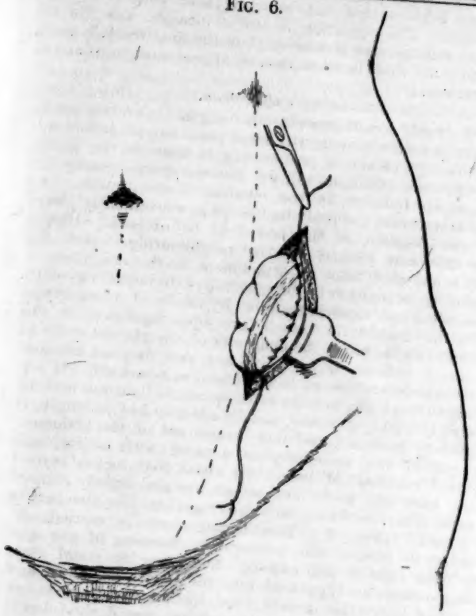
INTERNAL OPERATIONS.

I now propose to speak of the methods I use for dealing with the disease after the obstruction has been relieved for a sufficient time to enable the patient to bear the more serious internal operation. In a month such a case will usually be in good condition for this, and much on a par with one in whom the exploration is undertaken before obstruction has supervened. When explored the great majority of the cases prove to be cancer, a few are tuberculous disease, a few fibrous stricture, some from acute but more from chronic ulceration. The malignant growths are excised if possible, otherwise short-circuiting is the only available improvement upon colotomy. Tuberculous disease of the cæcum may be excised, but the results are not satisfactory. I have only done it in hospital practice, and not at all recently. For tuberculous ulceration lower down in the colon and rectum when severe the best surgical treatment is colotomy. Fibrous strictures vary much in their extent and position, and excision, short-circuiting, or colotomy may be employed in accordance with the special conditions present in each case.

SHORT-CIRCUITING.

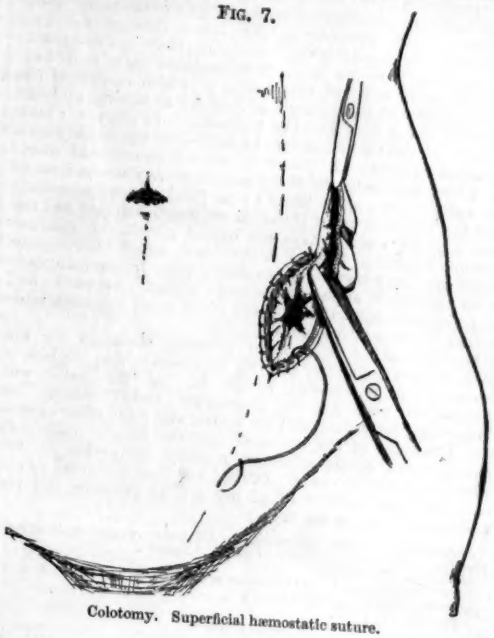
Short-circuiting for obstructions in the colon is a valuable operation, but as I have not yet carried out Mr. Arbuthnot Lane's views regarding the treatment for intestinal stasis, and as I always excise growths whenever possible, I probably do a smaller proportion of short-circuiting operations than many other surgeons. The technique employed is the same as for gastro-enterostomy—namely, clamps, an external suture of green catgut, and an internal hæmostatic suture of the same. The apposition is usually lateral, and when the

FIG. 6.



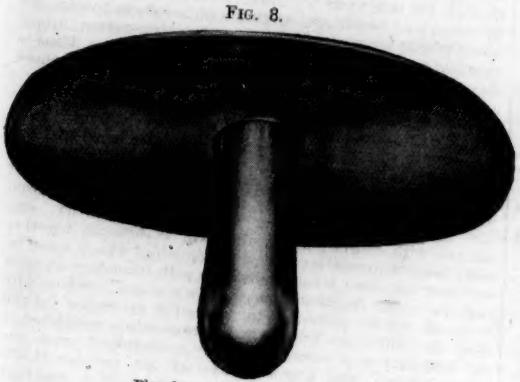
Colotomy. Deep suture.

FIG. 7.



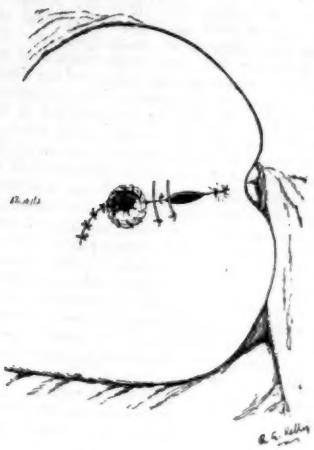
Colotomy. Superficial hæmostatic suture.

FIG. 8.



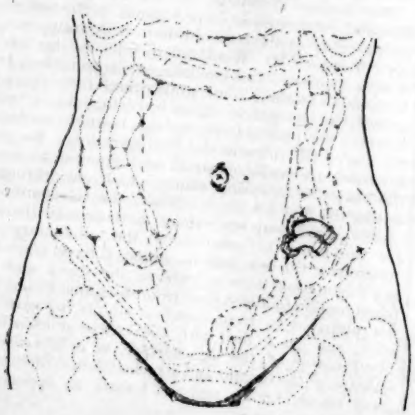
Plug for use in iliac colotomy.

FIG. 10.

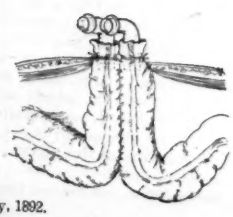


Excision of rectum, completed.

FIG. 9.



Colectomy. Author's operation. May, 1892.



obstruction is at the ileo-cæcal valve the ileum between the new orifice and the valve is puckered by a purse-string suture to direct the contents of the bowel through the new opening. In regard to this operation there are two points upon which it seems to me that emphasis ought to be laid. One is that in cases of obstruction in which paresis of the bowel is present short-circuiting may fail to relieve, while an external fæcal fistula will be successful. In practice I have failed with the former, and a day later done the latter with a satisfactory result. I, therefore, do not recommend short-circuiting operations in the presence of any severe form of obstruction such as is likely to be fatal without immediate relief. The other point is that in my practice I have had the best success when I have cut out of circuit the smallest possible amount of bowel. I, therefore, usually short-circuit just round the growth or other obstruction. In non-malignant cases the bowel appears to be quite normal afterwards, and in malignant cases the patients often enjoy a considerable period of comparative comfort.

Short-circuiting is a more pleasant operation for the patient than colotomy, and for this reason may replace it whenever it is feasible to do so, but the latter will always be necessary for inoperable rectal cancer, for dangerous obstruction, and for colitis, and some other ulcerative affections of the colon, so that the former really only comes under consideration in a small proportion of the whole number of cases. During the last ten years I have only short-circuited in 12 of my private patients, and the results are given in the table :—

Summary of short-circuiting cases.—All cases operated on in private practice, 1901 to 1911; 12 cases: 7 males, 5 females.
Mortality.—No deaths.
Operation.—Ileum to colon 8, colon to colon 4.
Disease.—Cancer 7, inflammatory 5.
Age.—2½ to 76 years.

COLECTOMY.

However good the results of short-circuiting or colotomy may be, we must always wish to excise a malignant tumour of the bowel whenever circumstances permit, and I propose now to deal with the operations planned for the removal of such growths, taking first those situated in the colon, and then those in the rectum. The cæcum and the sigmoid are the most favourable, and fortunately the most frequent situations for malignant tumours of the colon. The cæcal operation is certainly the more extensive of the two, and I used to prefer the sigmoid site, but on the whole I think the cæcal cases have done the best, chiefly in the way of the cure being more permanent. A rather liberal interpretation may be placed upon the definition of an operable tumour. The structures about which we are anxious are the ureter and the iliac vessels; the glandular infection; attachment to the parietes and other portions of bowel; and secondary distribution in more distal parts. The ureter is very rarely actually involved, though it may appear that it would be likely to be. The same holds good with the iliac vessels. Attachment to parietal peritoneum, or to portions of small bowel, do not necessarily render the case either inoperable or incurable. Infection of glands has to be considered in the light of the observations made on that subject in the earlier part of this address. Distant secondary infection, of course, negatives radical operation. Increasing experience has encouraged me to undertake the major operation in more cases of cancer of the colon, and in less cases of cancer of the rectum.

I did my first colectomy by the glass tube method just 20 years ago. At the time of publishing it[1] I narrated six other cases to show how this method had been led up to by previous unfavourable experiences with primary suture and buttons, which proved to be accompanied by a heavy mortality. Since 1892 I have adhered to the same technique, and with very good success. Only at one period, when I imagined I had become clever enough to obtain primary union, did I abandon the tubes and go back to suture. I did one case in this way at the infirmary and one in private practice. Both died, the latter being the only fatal case in the table, and the former sharing this unenviable distinction with only one other patient. No doubt the time will come when a better method than bringing out the ends of the bowel and draining them by means of glass tubes will be invented; but I doubt if I shall ever again excise tumours of the colon in any other way, as I know this can be undertaken with a very low mortality. The operation is not a pleasant one for the patient, and the cure is delayed, but the final result is good, and after all that is what should appeal most to us and to our patients.

[1] Liverpool Medico-Chirurgical Journal, 1895.

Author's Operation.

Very shortly I will describe the original operation again. In most cases the tumour will have been located before it is undertaken. If not, a preliminary incision in the middle line below the umbilicus will be necessary, and usually this will not be suitable for the removal of the growth. One needs an incision about six inches long, conveniently placed over the position of the bowel to be excised. Having made this, and packed off the neighbouring viscera, the bowel is loosened from its attachment to the neighbouring parietes by an incision in the parietal peritoneum, especially in the cæcal and sigmoid regions. By means of an aneurysm needle the mesenteric vessels are then ligatured on the proximal side as far as the character of the glands or size of the tumour indicate to be necessary, and they are clamped with compression forceps on the distal or bowel side. Upon cutting through the mesentery between the ligatures and the forceps, the fold of bowel, usually about a foot in length, is completely loosened, and now hangs out of the abdomen. The cut in the mesentery is sutured with catgut, and the two portions of bowel for about four inches beyond where they are to be cut across are also lightly sutured to each other, so that they lie together like the barrels of a gun. (Fig. 9.) This arrangement is carried out in order to render the subsequent clamping of the spur safe from risk of perforation. Next, two intestinal glass drainage-tubes are ligatured into the bowel, one above and the other below the growth, and the affected part is cut away. The exposed mucous membrane round the tubes is cleansed and dried. The abdominal wound is sutured, and the ends of the silk ligatures round the tubes are passed through the skin to fix the latter securely. (Fig. 9.) Then the stumps of bowel are covered with xeroform powder, the distal tube is plugged with wool, and a thin rubber tube is attached to the proximal to carry off fæcal matter. Done in this manner the operation is almost bloodless, and the shock inappreciable.

The tubes remain in for from five to ten days, and the wound takes from three to four weeks to clean up. Then a strong clamp of Dupuytren type is introduced and the long spur is clamped. This requires two days and the healing of the clamped edges will occupy a couple of weeks. Finally, the mucous membrane is separated from the skin, without opening the peritoneal cavity, and sutured with catgut; whilst the skin is brought together with deep mattress sutures of silver wire, which must be retained for some time as leakage with secondary union is perhaps more frequent than primary union. Silver wire is much to be preferred to any other substance for the deep skin sutures. I have had the operation completed in the infirmary in a month, but it is a mistake to rush the various stages, and I now always tell my patients it will take quite two months to complete the operation, and that it will be three months before they can expect to be fit for work again.

Mr. Arthur Edmunds, of the Great Northern Central Hospital, suggested an improvement in the technique of this operation as applied to children with intussusception, and my colleague, Mr. Woolfenden, tells me he has employed it with success. This encouraged me to make a trial of Mr. Edmunds's method in an adult when removing a malignant growth in the pelvic colon involving also a coil of small bowel. The plan is to clamp the bowel in conjunction with the use of the tubes at the first operation. For this purpose the tubes are made of metal and grooved to accommodate the blades of a spring clamp which cuts through the spur during the first few days. When the tubes are removed the clamp comes away with them, and already there is a way for the fæces to pass along the alimentary canal. To judge from the one case in which I have tried it, I should say this method adds a little to the shock and subsequent toxæmia due to absorption from sloughing tissue, hence I am not prepared to recommend it simply to save time. But when one has to deal with the escape of excoriating liquid fæcal matter on the skin surface, as in his cases, and as in excision of the cæcum and attached ileum, there is a definitely good reason for its use, and I shall, as opportunity offers,

test it in cases in which the small bowel has to be opened on the surface.

Results of Colectomy.

It might be assumed that bowel excised by bringing out the ends and restored by clamping the spur and suturing the opening without detaching it from its surface connexions would differ considerably from the normal and be subject to stricture. Yet this has never occurred in any of my cases, and I have not been called upon to do any further operation to improve the condition of the bowel. On the contrary, I once saw the bowel five years afterwards when operating for another trouble, and in this patient I could not have told that it had ever been touched at all. The entire sigmoid had been removed for gangrenous volvulus, and the ends brought out and clamped as described. On looking at the part, I found neither stricture nor adhesions, nor, indeed, anything to suggest that such an operation had been done. The patient was a young lady, 25 years of age. It may, I think, be safely assumed that no inconvenience will follow this operation when once the artificial anus has been satisfactorily closed.

The table of cases shows that I have undertaken colectomy on 18 private patients during the last ten years. Only one died—the patient in which I foolishly attempted primary suture, an otherwise favourable case of malignant growth in the transverse colon. The remaining 17 were done by the glass tube operation, and all recovered, though some of them were advanced in years. Among the most interesting points noted in the table is the long survival of patients who have been operated on for cancerous growths. Of the 17 cases, 3 were non-malignant and 14 cancer. Of the latter, 8 are still living and not known to have recurrence; 2 have died from apoplexy and 4 have died from recurrent growth at two and a half, three and a half, three and a half, and seven years respectively. It would be difficult to find another group of cancer cases showing such a satisfactory result. I certainly could not match it in any other branch of my work. Beyond the ten years I know of several other cases living and well, but thought it undesirable to complicate the matter by reference to patients outside the period selected.

Summary of colectomy cases.—All cases operated on in private practice, 1901 to 1911:—18 cases: 6 males, 12 females.

Mortality.—1 death (primary suture), 17 recoveries (glass tube operation).

Situation.—Cæcum 7, sigmoid 8 (3 volvulus), colon 3.

Age.—20-30 (2), 30-40 (2), 50-60 (8), 60-70 (5), 70-80 (1).

Life after operation.—Non-malignant: All living 3, 9, and 10 years. Malignant: 8 living ½, 1¼, 2¼, 3, 3¼, 6, 7½, 7½ years; died, recurrence 2½, 3½, 3½, 7 years; died, apoplexy ½, 2½ years.

EXCISION OF RECTUM.

There still remains the lowest portion of the large bowel to be dealt with, the rectum, and I do not propose to ask your attention now to any conditions of this part, except those which call for excision. One may sometimes attempt a resection of the rectum for other affections than malignant growths, but too rarely for such cases to have any influence upon our general method of operating. I have, indeed, excised syphilitic strictures, but it is long ago, and now it seems to me that such a serious operation as resection should be reserved for those cases in which the disease will prove fatal if not removed, the rest, if needing it, being treated by iliac colotomy. I have already expressed the view that a well-planned colotomy is not inconsistent with health and reasonable comfort or with the pursuit of ordinary avocations when a little consideration is extended to the person who has had to suffer this misfortune. If this were more generally admitted some lives—perhaps many—that are risked and lost would be saved, and many that struggle on to the end in misery would have some comfortable days in store for them. All cases of advanced cancer of the rectum, incurable fibrous stricture from syphilis or other cause, some recto-vesical fistulæ, and some tuberculous and other ulcerations should be treated by colotomy.

A Preliminary Colotomy.

It is also sometimes desirable in conjunction with resection. This has not been at all a frequent practice with me, but I am inclined to think it might have been better if I had made it more frequent. Does a preliminary colotomy lessen the risk of excision? Yes, it does. I think this cannot be doubted, and if so one should give great weight to the fact in all the more serious cases. Amongst these I would certainly include the high resections in poor types of patient, especially males in whom the operation is more difficult and the bone is more frequently cut. I would also include all cases in which the double route operation is adopted, especially as a transverse section of the bowel gives a very good form of artificial anus. Not only does a preliminary colotomy lessen the risks of the operation, but it expedites healing, and I consider these good reasons should lead us to make more frequent use of it.

Restoration of the Rectum.

Another general point in which my experience does not coincide with that of most surgeons is regarding the value of retaining any portion of healthy bowel that may be situated below the disease. I have long come to the conclusion that an attempt to retain the anus with more or less of the lower end of the rectum is bad practice. It is more often a source of inefficiency and trouble than an advantage from the functional point of view, while the operator's anxiety to reconstruct a normal passage conduces to local recurrence by restraining his freedom in removing the growth. However carefully one adapts the parts the resulting anus is rarely better, and often not so good as one placed high up at the top portion of the wound beside the sacrum (Fig. 10). In this position the bowel comes to the surface with a sharp turn which I believe assists considerably in comfortable retention of the motions in the absence of an expulsive effort.

A third point in which all now agree is the value of retaining the bone. In my earlier cases with Kraske's incision the loss of bone support to the pelvic floor was seriously felt in the frequent occurrence of extensive prolapse. I designed a somewhat uncomfortable spring truss to obviate, or assist in obviating, this trouble, and had to use it in all high resections. Now that the bone is not sacrificed the truss has been given up, for prolapse never occurs when a good union has been obtained.

Excision in Women.

In women it is frequently necessary, and perhaps always desirable, to incise or remove part of the posterior wall of the vagina. This gives such free access to the interior of the pelvis that the posterior incision, as a rule, need not involve the bone at all, being carried up and terminated on the right side of the coccyx. In the male one cannot obtain room to excise more than three or four inches of bowel without cutting across the bone. When the disease is higher I continue the incision along the lower half of the right side of the sacrum, and then turn it across the bone at right angles, dividing the bone with long, sharp bone forceps. This permits the whole flap to be turned to the left, and gives good access to the upper portion of the rectum, though not quite so good as when the bone is excised. Bone forceps are to be preferred to the saw, as a smaller incision suffices, and altogether there is less risk of destroying the sources of nutrition to the flap. Rough edges are smoothed away with "nibbling" forceps, and usually a little bone has to be nibbled away from the top right-hand corner to accommodate the sacral anus.

The Double Route Operation.

On the introduction of the double route operation I commenced to use it. My first four cases were female patients at the Royal Infirmary, and good subjects, though the growths were bad. They did well, and I was rather favourably impressed. The fifth was a man, aged 51, of neurotic type, operated on in private practice. He died on the sixth day, having suffered first from shock and finally from sepsis. A mortality of 1 in 5 is perhaps not excessive for such a terrible clearance of the pelvis, but the first death pulled me up and led me to reconsider the position. On the whole it seemed to me that so extensive an operation was not justified by the circumstances in the average run of cases, though it might be occasionally employed with advantage. It so happens that I have not made use of this operation again since, but that does not mean that I have altogether abandoned it. It has been recommended with an admitted mortality of 30 per cent., which, in my judgment, is preposterous. No operation in the present day could survive such a mortality. But this is not necessary. With due care

and proper selection of cases half that death-rate ought to cover our errors in judgment and technique, and then it might be employed for cases of cancer extending high up in the rectum, or in which lymphatic infection was probably taking place, as in colloid growths, or growths in which an extension can be felt spreading up the meso-rectum. After the first two cases I gave up the plan of bringing the pelvic colon down to the anus. It seemed to me safer and better to make use of it for a permanent iliac colotomy, and I think I should always adhere to this view. The double route operation is both easier and less dangerous in women than in men on account of the roominess of the pelvis and the presence of the uterus between the bowel and the bladder. The idea that it is always necessary to remove the whole meso-rectum is an exaggeration. Rectal growths, though more malignant than those in the colon, are not on a par with tongue or breast cancer, and operations planned on similar lines would render surgery accountable for a loss instead of a gain in the average duration of life of our cases of cancer of the rectum.

Ordinary Method of Operating.

My ordinary method of operating is as follows. The rectum having been prepared, the patient is placed in the lithotomy position with a sandbag under the sacrum, and, if a male, a bougie is passed to indicate the position of the urethra. An incision is then made round the anus and on to the coccyx. This wound is deepened into the ischio-rectal fat, and then with scissors the lower part of the rectum with the anus is cut free. The dissection is carried on in front until the prostate is reached, when the bowel is peeled off this organ with the finger until the peritoneum of Douglas's pouch is exposed but not now opened. During this first stage of the operation no dangerous but a good deal of smart hæmorrhage and free oozing may take place, yet time must not be expended by laborious searching for and tying innumerable small vessels, most of which bleed only for a short time. The "spouters" are at once clamped; all the rest are checked by stuffing a sponge into the wound on the side cleared whilst one progresses with the other side. Nothing can compete with sponges for this purpose and nothing but prejudice prevents us from using them. In all mouth and rectal operations I have continued to use sponges with comfort to myself and, I believe, benefit to my patients. If the patient is a female and the growth in the lower part of the rectum I always cut into the vagina, usually removing more or less of the posterior wall, and here again sponge compression is useful.

When the dissection in either sex has reached the peritoneum and more has to be done, I remove the crutch and turn the patient well over on to the left side with the right leg flexed on the abdomen. The incision is carried as much higher on the right side of the coccyx and sacrum as is necessary. In women, with the vagina open, this usually gives enough room. In men a transverse cut to the left must be made permitting either the separation of the coccyx or the section of the sacrum. The flap containing the bone having been turned to the left, the peritoneum is opened and the bowels packed off with gauze. Then with an aneurysm needle the large vessels of the meso-rectum are tied and the connexions cut until enough bowel is freed to permit of an artificial anus without tension at the top of the wound. This is the best place for it, as not only is less free bowel necessary for this position, but the sharp turn due to bringing it out posteriorly is a great aid in future control, as is also the firm bony support partly surrounding the new anus. When the necessary amount of bowel is free and brought down the pack is taken out of the pelvis and the peritoneum of Douglas's pouch is sutured to the anterior and lateral aspects of the rectum. Then the flap of bone is trimmed and replaced and the bowel is cut off flush with the skin, to which it is fixed by a continuous hæmostatic suture of green gut. Two or three very deep sutures of strong salmon gut are passed to close the perineum for 2 or 3 inches below the artificial anus, most of the rest of the wound being left open for packing with iodoform gauze. (Fig. 10.)[2] In the female, of course, the vagina must be repaired. It heals very well. When the operation is completed a morphine suppository may be introduced before the dressing is applied.

Dangers of the Operation.

The dangers of this operation are shock and sepsis. Shock means loss of blood, and is to be avoided by quick and dexterous operating. The hands should be bare, and sponge compression should be used to stop oozing. Sepsis is rarely dangerous except from sloughing of the lower part of the bowel due to the loss of blood-supply. This is unusual, but cannot always be guarded against. Fortunately it is rarely serious when it does occur, but it allows the bowel to separate from the top of the wound, and ultimately when the wound is healed the opening is placed lower down, and more in a line with the rest of the rectum, which means less control and more liability to prolapse. The wound usually heals kindly, though it is not, and with this operation cannot be, aseptic. The pack should be removed the following day, and subsequently wet dressings are the best. Chinosol and aluminium acetate both make excellent lotions. As in all rectal operations it is important to keep the bowels moving. The old plan of locking them up was the bane of rectal surgery. Plenty of fluid should be given from the first. There is always loss of blood in excising the rectum, and the sooner this loss is made up the less the danger from shock and sepsis.

Selection of Cases.

To be successful in this operation one must not only operate well, and carry out the subsequent treatment with care, but one must also recognise that this is one of those serious undertakings for which a wise discretion must be exercised in the selection of suitable cases. I used to accept almost all the cases which came under my observation, but lately have tended to weed out more and more the less favourable, and give them colotomy instead. Age and constitutional condition are important points, and must be considered together. I have done an extensive excision successfully at 74, and without anxiety, but the subject was of the healthy, wiry type. Too many men and women, especially in the well-to-do class, have by the time they reach 60 destroyed their tissues in various ways, and rendered themselves unfit subjects for an operation which calls for courage and physical fitness, for a capacity to resist shock and septic infection, and to carry on healthy repair for some weeks. From 55 onwards selection should be rigidly practised.

Results of Excision of the Rectum.

Operations for cancer of the rectum are on the whole less favourable than those on the colon. Contrasting the two I should say in excision of the rectum we have more hæmorrhage and shock, usually a more difficult operation, less freedom in removal, a larger and more serious wound to heal, and a more malignant type of cancer to deal with. On the whole the results of excision of the rectum are good, but there are reasons why we should expect a slightly higher primary death-rate, and a greater probability of recurrence than in the case of colectomy. The table shows that during the last ten years I have excised the rectum for cancer in 28 private patients. Two deaths occurred, one the double route operation in a male, the other a high resection in a female. Neither was a good subject, and I should now probably exclude them both, doing a colotomy instead. Of the 28, 13 are still living at 1, 1, 2, 2½, 3, 3½, 3½, 5, 6, 6, 7½, 9, and 10 years respectively. Of the remaining 15, 12 died from recurrence after an average duration of life of 13 months. One died from other cause without recurrence, and two, as stated, died from the operation.

Summary of cases of excision of rectum.—All cases operated on in private practice, 1901 to 1911:—28 cases, all cancer: 15 males, 13 females.
Mortality.—Two deaths (1 double route M. 1 high resection F.).
Age.—Under 50 (2), 50–60 (13), 60–70 (12), 70–80 (1).
Life after operation.—Living, 13: 1, 1, 2, 2½, 3, 3½, 3½, 5, 6, 6, 7½, 9, and 10 years. Died from recurrence, 12. Average duration, 13 months. Died from other cause, 1. Died from operation, 2.

Gentlemen, I offer these results of personal experience with much deference to my fellow surgeons, of whom so many have enjoyed better opportunities and are better fitted to benefit by them than I am. Doubtless some of my views will not meet with your approval, but I hope that here and there some fact or opinion may be found which will prove helpful to others, and this hope is my only justification in submitting to you these experiences in operations on the large bowel.

[2] For Figs. 6, 7, 9, and 10 I have to thank my colleague, Mr. Robert R. Kelly, assistant surgeon, Royal Infirmary.

SYPHILITIC LUNG AFFECTIONS AND IMMUNITY IN NATIVE RACES.

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WITH reference to the extremely valuable and interesting "Report on an Enquiry into the Prevalence of Syphilis in the South African Native," by Mr. B. G. Brock (contained in THE LANCET of May 11th, 1912, p. 1270) it is desired to endorse the importance of more frequently recognising syphilis, especially in the later stages when untreated, as a cause of lung disease.

In early secondary syphilis, catarrhal bronchitis or bronchitis is not infrequent, but is usually attributed to the use of mercury or potassium iodide, or supervening as accidental factors. The observation has previously been published that syphilis may be responsible for pneumonia in the early secondary stage. I possess notes of possibly 6–12 cases where pneumonia, and in some instances death, has occurred. The pneumonia may be of septic origin, possibly due to ulcerative conditions in the mouth, or due to carious teeth giving rise to septic intoxication. When the patient's health is thus undermined a generalised septicæmia may occur. Thrombosis of the femoral vein may occur in syphilis, and pyæmic abscesses in the liver are not unknown. Owing to service in the army I am not familiar with the interstitial form of congenital syphilitic fibrosis of the lung (white hepatisation) in ante-natal and immediate post-natal life. Of acquired syphilis, however, with the localised gummatous deposits, but more especially the interstitial pulmonary fibrosis of syphilitic origin (so-called fibroid phthisis) I have seen many instances, but usually late in the disease and almost invariably in neglected or in untreated cases. These were fairly common under the long service regulations in the British army in the days when syphilis cases were not followed up on discharge from hospital. In late years, however, since 1904, when syphilis has been thoroughly followed up and treated in accordance with Appendix VII., Regulations Army Medical Service, such cases are excessively rare.

Amongst the Native army in India, under the conditions that existed 15 years ago such interstitial pulmonary fibrosis of unquestionable syphilitic origin was by no means rare. This was previously explained.[1]

> Venereal disease is ten times more frequent amongst British troops than amongst Native troops. The Native soldier is under a long-service system. The annual invaliding and death ratios for venereal disease, however, as compared with the incidence of disease are excessive amongst Native troops. We are justified therefore in assuming that many cases must be severe, concealed, or untreated. Out-patient treatment should be more systematically practised amongst Native troops.

Mr. Brock states "that in the literature of the subject the condition of lung referred to in his report is hardly mentioned in any text-books or monograph on syphilis or tuberculosis that he has been able to refer to." In an article on syphilis written 15 years ago[2] the condition is referred to by me. On p. 43 the lung condition is assigned as a cause of death in malignant syphilis. "Death occurs from exhaustion caused by hectic fever or intercurrent disease, though gummatous deposits in the lung causing fatal hæmorrhage or chronic fibroid change are not infrequent." The possible causation of such lung changes in syphilis is also mentioned on the previous page.

> There is a progressive debility and anæmia from the onset and a tendency to lung complications, septic bronchitis, low forms of pneumonia, which may or may not be due to the syphilitic poison, but are certainly aggravated by the extremely fœtid odour and acute suppuration from ulcers or necrosis in the buccal cavity, and the liability to chill from the concurrent condition of hectic fever.

In another article on Malignant Syphilis[3] these points are again brought forward. A purely apical fibrosis, however, as suggested by Mr. Brock, has not been my experience. There has usually been a more generalised condition affecting one or both lungs, and in some cases possibly simulating chronic bronchitis, with which probably many cases are confounded, or more rarely tuberculosis. In my experience it would appear to occur in late untreated cases, being due to nature's effort to eliminate the poison by the lungs or through suppurating lymphatic glands or gummata, just as in early syphilis the skin, kidneys, and liver are more actively concerned in elimination where syphilis is untreated. I have seen acute nephritis more than once in untreated syphilis in the early secondary stage, and even death.

With reference to the extreme importance of the glandular system which Mr. Brock emphasises, the relationship of the lymphatic glands to early syphilis is well recognised. My routine practice in early syphilis has always been not to allow patients out of hospital until the size of these is thoroughly reduced; otherwise relapse usually ensues. These glands, as pointed out in the above quoted article in 1897 and in other articles[4] are unquestionably the repositories of syphilis. It was also pointed out that—

> Mercury and iodide of potassium, by their *depurative* action on the lymphatic glandular system and by their alterative and tonic effect on tissue change in general, can remove the external manifestations, the symptoms of syphilis, but the mode of action is similar to that of nature, which can do this unassisted. The rash and other symptoms are mere phases in the process of evolution. These drugs assist this natural process, and as the products of tissue change are removed by the lymphatics the virus is also removed or attenuated.

It is interesting to note, therefore, in this connexion that Dr. C. Levaditi, of Paris, reviewing recent work on immunity, endorses these views put forward 15 years ago from the clinical side before the discovery of the spirochæta pallida, the Wassermann serum reaction, and salvarsan. Mr. Brock quotes Dr. Levaditi as recently saying:—

> The immunity to syphilis differs from the immunity conferred by other diseases, which is associated with the disappearance of the virus from the tissues. Not so in syphilis, in which (the patient), although immune from the syphilitic virus from without, retains the virulent spirochæta pallida in such tissues as the lymphatic glands and bone marrow from which it may escape and cause a relapse.

In regard to another recently published observation, it is stated by Captain A. T. Frost, R.A.M.C., in a recent article[5] that Mr. C. H. Mills[6] suggests "that iodide of potassium given at the same time as salvarsan may intensify its action by absorbing newly-formed and partially organised fibrous tissue, and thus allow the drug to gain access to the T. pallidum." This is being tried by Captain Frost in all cases at present. A month previous to the date quoted above two Hunterian lectures on syphilis were delivered at the Royal College of Surgeons of England on Nov. 7th and 10th, 1911,[7] and when speaking of primary syphilis I stated:—

> Iodide of potassium, like salvarsan, is a good cicatrising agent, and has a powerful action on tissue metabolism, and is therefore capable of promoting the absorption of granulation tissue before its conversion into unalterable fibroid tissue. This would *ipso facto* allow local applications and batericidal agents normally present in blood to have free access to the spirochætæ. Local treatment and reduction of induration in the chancre is very important, and without doubt minimises the occurrence of relapsed chancres. It assists other medication to attack the spirochætæ embedded in fibrous tissue, and if "granule shedding" can "naturally" occur in spirochætæ, local recrudescences of the chancre are thus explicable when treatment, local and constitutional, is not sufficiently intensive.

Further, Mr. D'Arcy Power, in a "System of Syphilis" published some years ago, quotes from my book[8] (with acknowledgment):

> There can be no question that iodide of potassium, through its power of removing the barricades of nascent fibrous tissue in which the syphilitic virus is ensconced, thereby permits the leucocytes to enter, and so the syphilitic microbe is taken up or attenuated, and this explains the lessened anæmia of the patient.

Apart, however, from retention in lymphatic glands and bone marrow, as mentioned by Dr. Levaditi and other persons, localisation in any of the tissues, muscles, and nervous system also occurs, which may give rise later to gummatous ulcerations or light up fresh disease, more especially when sepsis from any cause such as carious teeth or septicæmic conditions are superadded. We go back, in fact, to the localised condition we find in early primary syphilis before generalisation in the lymphatic system and blood stream. In connexion with this I pointed out in 1897—

> That the very rapid action of iodide of potassium on the external lesions of tertiary syphilis, which is admitted to be a very *localised* phase of the disease (the virus being concentrated mainly in the tissues

[1] Syphilis in the Army, 1907, p. 5.
[2] King's College Hospital Annual Reports, London, 1897, vol. v., pp. 37–63.
[3] Journal of the Royal Army Medical Corps, 1905, pp. 477–487.
[4] King's College Hospital Annual Reports, 1903: The Action of Drugs in Syphilis.
[5] Treatment of Syphilis at Dublin by Intravenous Injections of Salvarsan.
[6] Guy's Hospital Gazette, Dec. 9th, 1911.
[7] THE LANCET, Nov. 11th and 18th, 1911.
[8] Syphilis in the Army, 1907, p. 49.

and slightly, if at all, in the blood and general system), would appear to give some credibility to the theory of a simple mechanical action on the glands and on the tissues rather than a definite specific action on a virus whose nature is not known. When the nature of the virus is discovered and demonstrated to be capable of producing syphilis the question of the *specific* action of this drug or of mercury on the poison can be experimentally set at rest.

If we accept, therefore, the Wassermann serum reaction test as our scientific proof, then the generally received view that iodide of potassium has no effect on the Wassermann serum reaction would appear to support the previous suggestion. Evidence seems to be slowly but surely accumulating that drugs—whether they be mercury, potassium iodide, or salvarsan—cannot with certainty destroy the syphilitic virus which we now know to be the spirochæta pallida. It is forced on one's mind, therefore, to inquire what share nature takes in eliminating syphilis or in overcoming its baleful effects. We apparently get Wassermann reactions because we fail to destroy the spirochæta pallida or its products. We may get negative reactions when we unduly push poisonous drugs such as mercury and salvarsan, and possibly temporarily destroy the bactericidal power of blood or lower the phagocytic power of the leucocytes or lessen the resistance of the animal organism. We frequently get positive reactions after salvarsan has been injected in cases that were previously negative. We get negative reactions in cases with obvious early or late constitutional syphilis. In infancy and old age results seem fairly constant, since in congenital syphilis positive results are apparently the rule, whether treated or untreated. In general paralysis in old age positive results are the order of the day.

We are told that salvarsan is much better than mercury or potassium iodide because it is possible to rapidly cure a syphilitic person and for that person to be again re-infected. In 20 years' experience of treating syphilis, and in some 6000 cases treated as in-patients and followed up as out-patients, I have never yet seen a second infection. I have seen pseudo-chancre induré of Fournier and Hutchinson. I do not deny, however, that, like small-pox, scarlet fever, or other diseases, a second infection in syphilis may possibly occur. Further, it would be interesting to know whether with the other chronic granulomata second infections occur. It is usually understood that a child affected with congenital syphilis could not acquire it. I have seen adult soldiers with late congenital syphilis, but never a congenital syphilitic with acquired syphilitic disease.

I thoroughly endorse Mr. Brock's quotation of Dr. Livingstone's statement when speaking of infections from natives in Africa, "that in persons of mixed blood the virulence of secondary symptoms seemed to be in all cases that came under his care in exact proportion to the greater or less amount of European blood in the patient." This may be noticed in Cashmere in India and in Burma nowadays.

As regards the Somali population at Aden it was noted many years ago,[9] "the type of constitutional syphilis amongst British soldiers at Aden in 1896–97 was most severe. There were many cases of malignant syphilis, of tertiary ulceration, of iritis and coincident scurvy. No form of control existed." This, as pointed out in 1905,[10] may be due to the neglect of primary syphilis amongst native races.

When we consider how much neglect favours the advent of pyogenic organisms and increases the virulence of disease. No doubt the virulence of syphilis is influenced by special conditions of blood in certain individuals. A marriage contracted outside our immediate sphere is commonly attended with benefit as regards the natural resistance of the offspring, who show commonly more stamina. So, too, syphilis transmitted from a vigorous to a less vigorous native, to a new or to a less resistant organism, is probably as potent in causing an exaggeration of severity in the person attacked.

Syphilis thrives on pus, and when pus is pent up by a tight prepuce or otherwise, both in syphilitic or in non-infective chancre (soft chancre), we commonly see phagedænic ulceration. In persons with carious stumps in their mouths syphilis may become a most virulent and almost a different disease to the average mild type, and hence the syphilitic septicæmia commonly seen with necrosing bone. Syphilis runs riot and persists in any septicæmic condition. Acquired syphilis, though an inoculated disease primarily conveyed by lymphatics, is essentially a blood disease when we come to treat it. If in an already syphilised person anæmia from any cause, such as malnutrition, bad teeth, scurvy, malaria, or tubercle, be superadded ordinary remedies may prove unavailing. The native has usually good teeth, and in adult life is not so susceptible to malaria because no doubt he had it in childhood. Amongst average Europeans or persons of mixed blood the teeth are commonly bad, and they frequently contract both malaria and syphilis, or may suffer from a tendency to scurvy in certain districts and are more debilitated from residence in tropical climates. This is a common observation with soldiers invalided from Burma, Rangoon, and Mandalay.

Haslund, of Copenhagen, thinks "that malignant syphilis is liable to occur in families where the ancestors have been but little affected with syphilis, so that there is little power of resistance against the disease." Be that as it may, the effect of control in a community diminishes syphilis first, soft chancre next, and gonorrhœa least. Syphilis is largely conveyed by trade routes, slave dealers, merchants, and sailors. The type of syphilis also becomes much modified as the result of control at the source and treatment, local and constitutional, in the early stages. At Malta, in 1908–09, some 87 cases of "freshly contracted" syphilis occurred in each year; in 1910, 35; in 1911, 13; and in 1912, till the end of May, only 5 cases. Not only are the numbers recently reduced, but the type is so modified as to be difficult of recognition. The induration of the chancre and the enlargement of proximal lymphatic glands are not nearly so marked, and, in fact, scarcely appreciable in some recent instances. The rash is a slight evanescent roseola. The severe forms previously met with are non-existent. The community has remained the same in size—namely, a quarter of a million persons, with 7000 soldiers and a smilar number of sailors.

This affords much food for reflection as to the underlying factors that are principally concerned in perpetuating and propagating syphilis, and I am inclined to the belief that neglect, dirt, and pus, and those factors that conduce to phagedæna are primarily responsible for perpetuating severe early forms, in addition to diminished resistance in the individual dependent on blood conditions. As regards prevention, local measures, such as pure carbolic acid and ethyl chloride, applied in the initial stages to chancres of all kinds, rapidly heals them, and to ensure good general health is probably quite as important as to administer mercury, potassium iodide, or salvarsan.

[9] "Syphilis in the Army," 1907.

[10] Journal of the Royal Army Medical Corps, 1905, Malignant Syphilis.

THE CAUSES LEADING TO EDUCATIONAL DEAFNESS IN CHILDREN,

WITH SPECIAL REFERENCE TO PREVENTION.

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(*Concluded from p. 143.*)

ACQUIRED CASES.

I NOW leave the congenital and pass on to the acquired cases, which numbered 592. The various causes which led to this condition are seen in Table A (*vide* THE LANCET, July 20th, p. 139) and require to be analysed. The *Infective Diseases* come first, and these number 214, or 34·4 per cent.; 156 of them, or nearly 72·9 per cent., belong to the *Infectious Fevers*—that is to say, of the whole number of the acquired cases 26·3 per cent., or more than a quarter, owed their origin to the exanthemata. Taking these in order, it will be found that their numbers and percentages were respectively—measles 68 (11·48), scarlet fever 58 (9·79), diphtheria 12 (2·02), pertussis 7 (1·18), influenza 4 (0·67), German measles and enteric 2 each (0·33), and epidemic cerebro-spinal meningitis, mumps, and chicken-pox 1 each (0·16). Small-pox and typhus do not appear, although they are present in the Margate records. Besides these, however, the exanthemata also figure to some extent among the "Combined Causes," so that the total figures are really higher than those just given. The infectious fevers appeared in 17 combined-cause cases, so that they were responsible for 173 out of 592 acquired cases, or 29·22 per cent. These causes must be studied in some detail and will be taken in order of frequency.

Measles.—Other observers give the percentage of measles

as follows: Wilde[1] as 1·4 per cent. of the Irish deaf-mute statistics in 1851; Hartmann[2] as an average of 3·6 per cent., varying from 0·0 per cent. (Meersburg and Gerlachsheim) to 8·0 per cent. (Berlin); and Mygind[3] 5·3 per cent. for 208 Danish deaf-mutes. My cases give 11·48 per cent., which is higher than any of the above. The deafness occurred from suppuration in 15, from middle-ear catarrh in 11, from catarrh in one ear and suppuration in the other in 1, from internal ear involvement (without previous suppuration) in 25, and from meningitis resulting in internal ear disease in 6.

Scarlet fever.—The statistics of other observers give:—Wilde,[4] 7 per cent. in Ireland in 1851, quoting New York as 5·6 per cent., and Sauveur as 11·3 per cent.; Hartmann[5] 11·3 per cent.; and Mygind,[6] 20·8 per cent. The latter gives statistics for several other countries, but there is no need to quote them all; they vary from 1·5 per cent. for Italian institutions to 42·6 per cent. for Saxony, and evidence great variation in the number of cases of acquired deafness due to this disease. My cases give a percentage of 9·79. The deafness in these children was brought about by suppuration in 42, catarrh in 2, catarrh in one ear and suppuration in the other in 1, suppuration with internal ear involvement in 1, and internal ear disease without suppuration in 12.

In comparing the comparative percentages of measles and scarlet fever they will, of course, vary with the severity of the epidemics which gave rise to them. One thing, however, is worthy of attention. It will be noted that the statistics of other observers give higher figures for scarlet fever than for measles, whereas my own figures indicate the reverse. I believe that this may be due to two factors: (1) that scarlet fever is becoming less virulent in this country than formerly (I do not know whether this is so, but it is possible that with improved hygiene the disease is wearing itself out); and (2) that children suffering from scarlet fever receive more care and attention than those with measles. The great prevalence of the latter disease is such that many cases may go undiagnosed, whereby complications have greater opportunity. Probably if measles were dealt with as seriously as scarlet fever the number both of persons suffering from that disease and from educational deafness due thereto would be materially diminished.

Diphtheria occurred as a cause in 2·02 per cent. of my cases. Mygind[7] quotes American statistics of 1880 (10,000 cases of acquired deaf-mutism) as giving only 0·7 per cent., Saxony as 0·3 per cent., Italy 5·3 per cent., Denmark (1879–90) 2·4 per cent., and Lemcke as giving 1·5 per cent. for all cases of acquired deaf-mutism. The cause of deafness in my cases was suppuration 6, internal-ear disease 4, and middle-ear catarrh 2.

Pertussis is not mentioned at all by some authors, but it is reported by Mygind[8] as 0·4 per cent. in 1881 and 1·0 per cent. in 1885 in Ireland, 1·5 per cent. in Mecklenburg-Schwerin, 1·5 per cent. in Saxony, 1·9 per cent. in America, and 4·3 per cent. for Denmark. My percentage of 1·18 is, therefore, about the average. In three of these the deafness was due to suppuration and in four to internal ear conditions. Banks Raffle[9] has recently shown that suppuration may result from the forcing of infective material into the middle ear during the spasmodic cough of the disease. Wilde remarks that he cannot determine whether whooping-cough produces deafness by local injury to the ear caused by a violent fit of coughing or "from its effect on the nervous system." It is quite possible that it may cause an intra-labyrinthine hæmorrhage, but, in view of the common and protracted nature of the disease in children, it is necessarily often complicated with other conditions which may be the real cause of the deafness.

Influenza was the cause in 0·67 per cent. of my cases, the deafness being due to internal ear disease without suppuration in 3, and internal ear disease following convulsions (? meningitis) in 1. It is quite possible that some of the cases classed as deafness due to middle-ear suppuration may have originated in influenza. Considering how often the disease affects the ear, Mygind[10] points out that it is surprising that Wilde is the only author who mentions it as a cause of deaf-mutism, giving it as forming 0·6 per cent. of the acquired cases in Ireland in 1851.

German measles occurred in 2, or 0·33 per cent., in both of which the deafness was of the internal ear type. I have been unable to find this disease mentioned by other investigators.

Enteric fever also was the cause of 2 cases (0·33 per cent.), both of internal ear nature. No statistics are available in Mygind's work, although it is mentioned as a possible cause in some of the cases put down to typhus. Enteric may give rise to middle-ear suppuration or to internal ear deafness, and instances of both are to be met with in adults.

Epidemic cerebro-spinal meningitis appeared as the cause in one case (0·16 per cent.) of internal ear deafness. This is a disease which may do great damage to the organ of hearing, but does not occur with great frequency in this country, or, possibly, the percentage would be higher. It is, further, more efficiently treated than formerly. Hartmann[11] gives no less than 26·8 per cent. of acquired deaf-mutes in Pomerania-Erfurt as owing their condition to the disease in 1874–5. Other statistics quoted by Mygind[12] vary from 23·5 per cent. for Norway to 1·1 per cent. for Saxony. The variation is probably due to the difference of occurrence and virulence of epidemics.

Varicella occurred in one case (0·16 per cent.) due to middle-ear suppuration. In 1880 it caused 10 out of 10,000 cases (0·1 per cent.) in the United States.[13]

Mumps is decidedly uncommon as a cause of deafness. Boot[14] has collected 51 cases from all over the world, in all of which the labyrinth was involved. One case (0·16 per cent.) of my own was due to this disease, the deafness being labyrinthine and acquired at the age of 5. Mygind[15] found mumps reported as a cause of deaf-mutism in 0·3 per cent. of cases in Saxony and 0·5 per cent. in America.

In dealing with the exanthemata, a knowledge of how they bring about educational deafness is essential to advance in prophylaxis; I have, therefore, given above the types of defect in those of my cases which were due to them.

Small-pox does not appear in my statistics, but is given as a cause in one case at Margate (0·4 per cent.). In 1821 Itard[16] declared "that small-pox is, or rather has been, a frequent cause of deaf-mutism." Mygind[17] quotes E. Schmalz (1848) as giving 22·2 per cent. of cases, H. Schmalz (Saxony, 1880) 2·8 per cent., Wilde (1851) 2·4 per cent. and (1841) 1·4 per cent., and other statistics varying from 2·4 per cent. in Austria in 1884 to 0·0 per cent. in Würtemberg-Baden in 1882. It would be interesting if statistics of deaf-mutism a century earlier could be obtained to compare with these. There can be no doubt that this terrible disease has practically disappeared from deaf-mute statistics since its powers have been shackled by compulsory vaccination. From small-pox as a cause of deaf-mutism I am led to mention *vaccination*, which does not appear in my statistics, but is mentioned as a cause in 4 cases at Margate (1·6 per cent.). I can, however, give no particulars of these cases, which were in all probability anti-vaccination mare's nests, but I would quote the remark in the American statistics,[18] that it is included among "causes which have been rejected as too vague, improbable, or inconsequent, to be included in a formal tabulation." Mygind[19] considers that "it cannot be denied that vaccination may possibly cause deaf-mutism, but no well-substantiated cases prove that it is so."

Typhus is a cause that is sometimes given. It is mentioned three times in the Margate statistics (1·2 per cent.). The term, when occurring in deaf-mute statistics, doubtless includes, according to Mygind,[20] numerous diseases with typhoid symptoms. Hartmann gives it as causing 20 per cent. of cases, but more recent investigations give a much lower ratio. It would appear, however, that there are no reliable statistics as to its occurrence. In this country, at any rate, the disease has practically disappeared.

[1] Practical Observations on Aural Surgery, London, 1853, p. 486.
[2] Loc. cit., p. 75.
[3] Loc. cit., p. 119.
[4] Loc. cit.
[5] Loc. cit., p. 76.
[6] Loc. cit., p. 116.
[7] Loc. cit., p. 123.
[8] Loc. cit., p. 126.
[9] School Hygiene, vol. i., p. 98.
[10] Loc. cit., p. 125.
[11] Archives of Otology, vol. ix., pp. 307–329.
[12] Loc. cit., p. 111.
[13] Wines, Tenth Census, Washington, 1888.
[14] Journal of the American Medical Association, vol. ii., p. 1961.
[15] Loc. cit., p. 126.
[16] Traité des Maladies de l'Oreille, Paris, 1821, p. 381.
[17] Loc. cit., p. 123.
[18] Wines, loc. cit., p. 416.
[19] Loc. cit., p. 125.
[20] Loc. cit., p. 121.

Leaving the exanthemata, there remain certain other infective diseases to be considered. These are pneumonia, rheumatic fever, tuberculosis, and congenital syphilis.

Pneumonia was responsible for 16 cases (2·7 per cent.). In 11 of these the deafness was internal ear in type, in 4 it was due to suppuration, and in 1 to middle-ear catarrh. This percentage is a higher one than those given by Mygind,[21] which are 0·5 for Norway and 0·96 for Denmark. Considering the frequency with which the pneumococcus is responsible for suppuration, one might expect to find pneumonia figuring in causation with greater frequency.

Tuberculosis.—In only 2 cases (0·33 per cent.) was tubercle proved to be responsible for deafness. One showed total deafness following internal ear complications in tuberculous meningitis. The other was a case of tuberculous disease of the middle ear which had undergone between 14 and 17 operations, hearing being reduced to one foot for loud voice. Mygind shows that the number of cases referable to tubercle[22] is very small, the statistics quoted being Ireland (1881) 0·1 per cent., Magdeburg (1874–75) 0·5 per cent., America (1880) 1·3 per cent., Denmark (1879–90) 1·0 per cent. He remarks that "it probably causes deaf-mutism by predisposing to suppuration of the middle ear." It may appear remarkable to some that the percentage of middle-ear tuberculosis is not higher among the causes of educational deafness, considering their frequency in young children and the severe destruction for which they are responsible. It may be that some of the more severe cases of suppuration began as a middle-ear tuberculosis, but that the original cause was masked by other infections, as is often the case. I have, however, only included here cases in which tubercle could be established definitely, and it may be pointed out that a probable reason for the small percentage, not only in the cases under analysis, but in the statistics given by other observers, lies in the fact that in the great majority of cases the child attacked by tuberculosis of the temporal bone dies before school age.

Congenital syphilis.—I have already mentioned this disease as playing a possible part in sporadic deaf birth, but a part the existence of which is by no means proved as yet. There is, however, no doubt that it is responsible for an appreciable number of severe cases of acquired deafness in children, although it does not usually figure in statistics, and is dismissed by Mygind[23] in a very few words. It would not have appeared in the cases I am now analysing were it not that they have been examined medically. The causes originally given for the 39 cases here mentioned were: unknown, 21; fall, paralysis, inflammation of the brain, improper medical treatment, 2 each; chorea, whooping-cough, blow, nerves, tubercle, consumption, chicken-pox, broken leg, weakness, and run over, 1 each. It is, therefore, only when a series of deaf cases is investigated by a doctor that those due to congenital syphilis can be detected. For example, Castex,[24] in examining cases in the Paris institutions, found (1908) 18 cases out of 719, or 2·5 per cent. I have already[25] published a description of 17 instances among 225 acquired deaf-mutes, all of whom are included in the 39 cases entered in Table A, the additional 22 having come under observation since the paper quoted was written. All of them had well-marked ocular manifestations, many showed typical Hutchinson teeth. I have recently commenced to investigate their Wassermann reactions, but find that they do not all yield positive results. Some of the histories of these cases are very interesting, and I give them as showing how great is the need for legislation in the matter.

No. 19. Girl. Old interstitial keratitis, marked Hutchinson teeth, and caries of first molars. Mother appears healthy; no miscarriages. 4 children: (1) male, died at 5 months, "inflammation of bowels"; (2) girl, the patient; (3) girl, aged 9 years, healthy; (4) girl, aged 6 years, healthy.

No. 345. Girl. Teeth and eyes negative, rhagades about the mouth. Wassermann positive. Mother a prostitute, deserted father in 1908. Father suffers from "disease contracted from mother." 11 children, 4 died in early infancy.

No. 394. Girl. Interstitial keratitis and Hutchinson teeth. Mother had 11 children. 1 and 2 born dead; 3, 4, and 5 died at 3 weeks, 3 months, and 1 week; 6, patient, aged 10 years ("weak bowels" as an infant); 7, boy, 9 years, healthy; 8, girl, 7 years, healthy; 9, boy, died at 12 months, measles; 10, boy, died at 11 days, "hæmorrhage"; 11, boy, born dead.

No. 417. Girl. Interstitial keratitis and synovitis of both knees. Mother had healthy children by first husband. By second husband had 3; 1 and 2 died at 4½ years and 13 months from "consumption of bowels"; 3, patient, suffered similarly, but recovered.

No. 420. Girl. Interstitial keratitis and Hutchinson teeth. Mother had 10 children; 5 died (1 prematurely, 2 from marasmus, 1 from hydrocephalus), 5 living; 1, boy, 22 years, healthy; 2, girl, 19 years, "asthma"; 3, patient, 12 years; 4, boy 10 years, "very delicate"; 5, girl, 5 years, strong and healthy.

No. 135. Boy. Old interstitial keratitis and iritis. Hutchinson teeth, first molars carious. Wassermann negative. Parents had 8 children, 3 living, 4 were stillborn, 1 survived four weeks. Of the 3 living, 1, boy, 20 years, imbecile; 2, patient, deaf and mentally defective; 3, boy, physically defective.

No. 402. Boy. Old interstitial keratitis and iritis, joint synovitis, Hutchinson teeth. Parents had 7 children: 1, boy, died 6 months, hydrocephalus; 2, girl, 10 years; 3, patient, 8 years; 4, girl, interstitial keratitis; 5, boy, died at 1 week, "brain disease"; 6, girl, 3 years; 7, boy, 1½ years.

The number of cases in my statistics is 39, or 6·5 per cent., a much higher proportion than that shown in any other country, nearly three times as high as that given by Castex for Paris. Kerr Love[26] does not think it can be expected that syphilis will figure largely in returns furnished through the medium of institutions. The reason thereof is amply demonstrated by the list of "causes" given for my 39 cases before they were examined by me. Love mentions two cases in 110 acquired deaf-mutes (1·8 per cent.) as due to syphilis. From certain meagre evidence afforded by the register of the Fitzroy-square school I concluded that 8 cases might have been due to this disease. In this register 142 children were undoubtedly born deaf, leaving 180 doubtful and definitely known to have acquired their deafness after birth. The percentage would thus be 4·4 per cent., but all of these were ascribed to other (vague) causes. Certainly in the area served by the London County Council schools the number of congenital syphilitic cases is large, and it could be reduced by prophylactic measures. Some of the cases which came under my observation are terrible examples of the ravages which the disease may cause. Two of them will serve as instances. One, a bright and very intelligent girl, the only one left of four children born to a father invalided from the army, had cornea so dense, with pupils occluded and excluded, as to reduce vision to mere perception of light. She was stone deaf, even bone conduction being lost. Teeth not Hutchinsonian. She had been taught Braile, but could converse only by means of words spelt upon her own fingers by others. The second case became deaf at 9 years, and was one of five survivors of a family of seven. Family history unreliable. Teeth Hutchinsonian. Too blind from old interstitial keratitis to learn lip-reading (she had to be led about the school when first admitted). Nasal bones and septum lost by necrosis, interior of nose disorganised and crusting, uvula lost, palate scarred, and right tonsil, faucial pillars, and salpingo-pharyngeal fold welded into one indistinguishable mass. Totally deaf, only a little bone conduction remaining. Such cases as these are a disgrace to a Christian country. I have spent some little time discussing congenital syphilis in order to emphasise the fact that it may furnish a very appreciable percentage of acquired educational deafness, a fact which does not seem generally to be recognised.

The next group of cases comprises those due to *diseases of the nervous system.* These number 111, or 18·7 per cent. *Meningitis* (excluding epidemic cerebro-spinal meningitis and tuberculous) forms the greatest bulk—65, or 59·4 per cent., or 10·9 per cent. of the whole acquired cases. They were all instances of internal ear deafness, and in 19 (18 per cent.) the meningitis followed an injury to the head. Forty-five other cases were ascribed to "fits" (26), "convulsions" (12), "brain fever" (1), or "inflammation of the brain" (6), but no evidence could be obtained to differentiate them from meningitis. One case (0·16 per cent. of the total acquired cases) was due to hydrocephalus. Diseases of the brain and meninges play an important part in the causation of educational deafness acquired after birth. The statistics quoted by Mygind[27] vary from 11·9 per cent. (Ireland, 1881) to 54·5 per cent. (Pomerania-Erfurt). Some of these include epidemic cerebro-spinal meningitis. Every one of the 111 cases due to disease of the nervous system showed internal ear deafness and was due probably to extension from the meninges to the labyrinth. One must look upon meningitis as a very potent cause of

[21] Loc. cit., p. 127. [22] Loc. cit., p. 128.
[23] Loc. cit., p. 128.
[24] Bulletins et Mémoires de la Société Française d'Oto-Rhino-Laryngologie, 1908.
[25] Journal of Laryngology, vol. xxv., p. 181.
[26] Deaf-Mutism, Glasgow, 1896, p. 148.
[27] Loc. cit., p. 108.

acquired deafness and one that may quite possibly be responsible for more cases than appear in the statistical tables. I am of opinion that a certain number of those cases said to be born deaf—the sporadic congenital deaf-mutes already alluded to—are really instances of early acquired deafness following unrecognised meningitis. Experience has shown me that the occurrence of illness in early childhood easily may be forgotten, especially in large families, and that it may be elicited sometimes by careful and guarded questioning. If, as in one case I remember,[28] which showed very marked deafness said to be congenital, a history can be obtained of an obscure illness in infancy, throughout which the child evinced signs of great head pain, there is fair presumptive evidence that the case is really one of acquired deafness due to meningitis.

The next group to be taken is that in which the acquired deafness was due to *primary ear disease*. It is in this class of case that prophylaxis is important and, in reality, easy. The cases comprised are practically all those of middle-ear disease, internal ear conditions being classed under the causes which led to them. Until quite recently (and I believe the word is still in use by a few practitioners) the term "idiopathic" was frequently employed to describe conditions of which the true cause was unknown, a term which afforded an excellent refuge for the etiologically destitute, since it is polysyllabic and has a learned smack about it. There are no "idiopathic" internal ear conditions, unless otosclerosis, the real cause of which has not yet been made out, be reckoned one. In this class, therefore, must be placed only those cases in which the disease began primarily in the ear, and these are mainly of middle-ear nature. Strictly speaking, all or most of them should be classed under diseases of the nose, for it is usually in the nose or nasopharynx that middle-ear trouble begins. It will be, however, more convenient to place them under diseases of the ear.

There were 176 children in this group, or 29·7 per cent. One case may be dismissed at once, that of a girl who lost her hearing from otosclerosis to an extent sufficient to render her "educationally deaf" under the Act of 1893, when she was 11 years old. When first seen, she presented all the signs of typical "otosclerosis" and could only hear the voice at 10 inches in the right and 27 inches in the left ear. She has since become much more deaf. *Otosclerosis* has not, I believe, figured in deaf-mute statistics before.

Of the other cases, middle-ear suppuration and middle-ear catarrh bulked almost equally. There were 86, or 14·3 per cent., of the former to 89, or 15·0 per cent., of the latter. Taking *middle-ear suppuration* first, it must be understood that suppuration due to infectious fevers, &c., is not included. Of the 86 cases, 4 were due to injury, 1 to "blood poisoning," 43 undoubtedly resulted from adenoids, 2 from other nasal causes, and 1 might have originated in middle-ear tuberculosis, but the evidence was not sufficiently conclusive to justify its inclusion under that heading. The remaining 35 were doubtful as to exact mode in which the suppuration began. There is no need here to go into statistics as to mastoid operations and the number of cases still having discharging ears, but it may be mentioned that 2 showed secondary internal ear deafness. Of the whole 86, 19 were totally and 67 partially deaf. What I wish to emphasise about these cases is that at least 45 of the 86, or 52·3 per cent., were due to nasal causes, the vast majority being adenoid in origin. That is to say, over half of them were preventable.

The cases of *middle-ear catarrh* are equally interesting. Like those due to congenital syphilis, any cause but the right one is often given. Six were ascribed to "fright," "nerves," gastro-enteritis" (probably in this instance both intestinal and ear conditions were due to the same cause—adenoids), "burns," "congenital," and "unknown," 2 to "shock," and 2 to "teething." The deafness was complete in 5 cases (one having secondary internal ear involvement), partial in 84 (4 with secondary internal ear involvement). Investigation showed that no less than 85 out of the 89 (95·5 per cent.) originated in nasal conditions, 80 (89·7 per cent.) being due to adenoids. Taking the suppurative and catarrhal cases together, we find that 130 out of 175, or 74·2 per cent., were dependent upon preventable causes, or, further, dealing with the whole 592 acquired deaf cases, 21·9 per cent. were due to preventable middle-ear disease. This conclusion is a somewhat striking one, and is rendered all the more serious when we remember that these figures represent *only* children whose deafness is so severe as to necessitate the highly specialised educational treatment of the deaf school or of the "hard of hearing" class, and that there are many others receiving education in ordinary hearing schools who are suffering from lesser degrees of deafness, some of whom are doomed to become much more deaf in adult life.

We now come to a variety of conditions grouped under the head of *miscellaneous causes*. These may be dismissed in a few words. They number 58, or nearly 9·8 per cent., of the acquired cases, and *injury* forms their great bulk, 50, or 86·2 per cent. (including 5 cases of *concussion of the brain*). These do not include injuries which resulted in meningitis. The injuries included falls or blows on the head and "run over." All were cases of internal ear deafness, 29 being totally and 21 partially deaf. Traumatism appears in the causes of deaf-mutism in nearly all the more considerable statistics. Mygind[29] quotes 5·0 per cent. in Mecklenburg-Schwerin, 4·3 per cent. in America (1880), the lowest being 1·4 per cent. for Denmark. Deafness in such cases is probably due to fracture of the base of the skull involving the petrous or to concussion of the labyrinth.

The other miscellaneous causes require to be very carefully investigated. *Burns* or *scalds* were said to be responsible in 3 cases, one of which proved to be due really to middle-ear catarrh, and is included under that heading. Two (or 0·33 per cent.) remain unaccounted for otherwise than by the cause given. Both showed internal ear deafness, said in one case to be due to a bad scald at 13 months, in the other to shock following severe burns, the scars of which were evident. Mygind[30] includes burns among his "doubtful" causes.

Shock or *fright* was stated to be the cause in 9 cases. Investigation showed 1 due to middle-ear catarrh, and 5 probably congenital, under which groups they are included. This left 3, or 0·5 per cent., all of which were deaf from internal ear causes, in one of which fright was followed by prolonged vomiting.

Teething is not uncommonly given as a cause of early deafness, and 10 of my cases were ascribed to it. Seven did not bear investigation, which showed that 3 were congenital, and 2 were due to middle-ear suppuration and 2 to middle-ear catarrh. The remaining 3 gave a history of "fits" or convulsions" during teething, and should, probably, be included under the heading of meningitis.

Lightning stroke occurred as a cause in 1 case and *sunstroke* in 3 cases at the Margate School. Hartmann[31] mentions the former, and 31 cases of sunstroke are reported in the American statistics for 1880.

Seventeen cases (2·8 per cent.) are entered in Table A as due to *combined causes*. They were instances of acquired deafness in which it was not possible to come to a reliable decision from the evidence as to which of the two causes given was responsible for the condition. They are classified in Table M and do not call for any special comment.

TABLE M.

Causes given.	Type of deafness.		
	Suppuration.	Catarrh.	Internal ear.
Scarlet fever and typhoid	1	—	—
,, ,, ,, measles	1	2	—
,, ,, ,, meningitis	—	—	1
,, ,, ,, diphtheria	2	—	—
Measles and diphtheria	—	—	1
,, ,, pneumonia...	2	—	5
,, ,, influenza	—	1	—
German measles and influenza	—	—	1

There were 11 *doubtful* cases, of which 2 proved to be catarrhal and 2 congenital, leaving 7, or 1·1 per cent.

[28] Archives of Otology, vol. xxxvi., p. 447.

[29] Loc. cit., p. 131.

[30] Loc. cit., p. 130.

[31] Archives of Otology, vol. ix., p. 211.

The causes given with these were "fever" in 2, "blood poisoning" in 1, and doubtful deaf birth in 4.

Lastly, 10 were originally classified as cause "*unknown*"; 1 of these was found to be undoubtedly a case of middle-ear catarrh, leaving 9, or 1·5 per cent., in which no cause could be ascertained.

Having thus analysed these 1076 cases as regards causation, I now propose to discuss the possibilities of prevention according to the indications the analysis affords. Such discussion divides itself into two headings, according as the cases are congenital or acquired, the second offering the more tangible prospects of success.

THE POSSIBILITIES OF PREVENTION OF DEAF BIRTH.

The indications that the congenital cases convey seem to be that heredity and consanguinity are the most prominent factors, with a possibility that alcohol, insanity, and perhaps syphilis are the most important of the minor causes. We have seen that out of 123 families deaf birth occurred in the direct line or in collateral branches in 56, or 45·5 per cent., and that out of 309 families consanguinity of parents was present in 22, or 7·08 per cent., whilst the percentage of parental relationship in 592 acquired cases was only 0·32. In my articles on the Education of the Deaf, already quoted, I mentioned some of the problems presented by heredity and consanguinity in deaf-mutism, and, for the sake of brevity, I must refer the reader to the remarks therein made. It is not possible completely to eradicate congenital deafness, for a certain number of deaf births will always happen, just as with other sporadic cases of defect. I am of opinion, however, that their number very materially could be diminished by the application of eugenic principles. If marriages of the deaf-born and of blood relations and the union of alcoholics, syphilitics, and those having a family taint of insanity, epilepsy, or other neurosis could be prohibited, a good deal would be gained, but it would be scarcely enough. Besides the prevention of marriages undesirable from the eugenic point of view, there exists a precaution of a more positive nature—the sterilisation of the unfit. This measure has already numerous partisans, although they are at present in the minority. Many eugenists prophesy that the time approaches when the suggestion will receive practical support; it has already been discussed as within the range of practical politics.[33]

These are the two chief indications that suggest themselves for the reduction of the number of deaf births, and both are, to say the least of it, difficult of execution. At present we can only endeavour to educate public opinion. Until it is educated restraint is the only alternative. The task of education is one in which our profession is, or should be, eminently fitted to assist. Now that a chair of eugenics has been endowed recently in London there is a possibility that this new branch of science may, in time, form a recognised part of the curriculum of medical education. When this is accomplished and the doctor is recognised with respect as an expert whose advice is valuable to the State, and not looked upon as a mere hack to do cheap contract work for the glorification of third-rate politicians masquerading as statesmen, the struggle for the betterment of the race conducted upon scientific principles will really have begun. It is only in the loyal and appreciative coöperation of doctor, eugenist, and legislator that there is any hope for regeneration in such matters, and for this the doctor must be taught as a student. Preventive medicine has a wider significance than mere public health, so-called; the whole science and art of medicine and surgery should be preventive before it is curative. We have in our hands the means for prevention, and the medical student should be taught that his first duty is to use them.

In respect of sporadic cases of deaf birth, attention must be turned to hygiene, especially to the hygiene of motherhood and to the control of such racial poisons as alcohol, lead, and syphilis. Some day it will be recognised that there is but one way of dealing with the first and last of these three poisons—the scientific method. The pathology of all these agents is known to us and we have in hand ample evidence of the way in which they act, so that means for their prevention are clearly laid down. But to prevent them would be "interfering with the liberty of the subject," forgetting that Burke defined "liberty" as "equal restraint for all." The State should have full power, and should acquire and use it *fearlessly*, to deal with the alcoholic and the syphilitic just as it deals with the vitriol thrower and the person with small-pox or scarlet fever who knowingly exposes himself. The alcoholic and the syphilitic are dangers to the State, dangers to their fellow-citizens, and, what is even worse, dangers to the State's future citizens. The "liberty of the subject" was never intended to be construed as liberty to injure others; yet that the alcoholic and the syphilitic should, under the ægis of liberty, be free to do as they will, gives tacit acquiescence to such an interpretation, and the burglar, the murderer, and the thief are not more criminal. Men and women can be made neither temperate nor moral by Act of Parliament, but they can be controlled and restrained from allowing the consequences of their own folly to do lasting injury to others.

[33] THE LANCET, 1911, vol. ii., pp. 328, 472, 546, et seq.

THE PREVENTION OF ACQUIRED DEAFNESS.

When we turn to the acquired cases we are working upon surer ground. Many of the details already given in the above analysis will suggest measures for their prevention and give some indications as to the direction which efforts should take for the reduction of acquired educational deafness. Before reviewing some of the groups in detail a few words must be said upon prophylaxis generally. The prevention of acquired educational deafness embraces a number of factors. It means, among other things, better care of children generally, better hygiene, better feeding, better surroundings. Modern methods have already done something to lessen the frequency of many ailments that give rise to ear disease in infancy and childhood, but much remains yet to be done. There can be no doubt that, speaking in a general sense, the children of the upper and lower middle classes and of the better circumstanced of the lower classes are more scientifically fed and clothed and receive more fresh air than formerly, but these improvements have not penetrated as yet to the children of the very poor. I speak as one who looks on and who thus sees a good deal of the game. I judge by what I see in visits to deaf schools, in my hospital clinic, and at interviews with children and their parents specially referred to me from different schools for special opinion. It is impossible, under existing circumstances, that improvement can penetrate to the very poor, save extremely slowly. Only those who work among them can realise the ignorance and squalor with which their children are surrounded. If modern Mrs. Jellabys would but leave their projects for the distribution of flannel petticoats and warming pans (with the inevitable accompaniment of bad whisky) among the inhabitants of Equatorial Africa, and, turning from the complacent missionary, would give their serious attention to the heathen who live at their very doors, they would find much to fight that is really worth fighting—drink, dirt, and superstition. Instead of introducing degenerating influences to the black, they could help to regenerate the submerged and fallen of their own race. The problems of the city poor are many, both for the sociologist and for the doctor. Let us leave the former to do his best, and see in what manner the latter can play his part with most advantage to the race.

Among the things that the doctor has to contend with are various deeply-rooted superstitions concerning the ears. It is considered "dangerous to stop a discharge," and many parents assert (and, I believe, frequently in perfect good faith) that "the doctor said so." The origin of this idea, pregnant with danger, probably lies in the fact that pent-up pus in the bone-surrounded cavities of the middle ear leads to headache and the serious complications which may arise in the course of a chronic suppurative otitis. In acute cases, too, pain usually ceases with perforation and the onset of discharge. It is impossible for the ignorant mind to resist the apparent association of cause and effect in such cases. It is the duty of the doctor to explain to them, in a manner agreeable to their comprehension, that it is not the cessation of the discharge, but the tension consequent upon its retention, which is responsible for untoward symptoms and results. Yet have I once heard a doctor tell a mother to let her child's suppuration continue, because it was dangerous to stop it! With this superstition goes the *laissez aller* policy embodied in the assertion that the child "will grow out of it," a phrase used as a cloak for indolence and ignorance. More often if left to itself it is the discharge or deafness which outgrows the child. Less frequently heard now, this dangerous policy is still to be met with, for old and especially evil superstitions die hard.

Another curious superstition is that relating to the mysterious influence supposed to be inherent in the number 7. I am frequently told that nothing has been done to combat a middle-ear suppuration or a progressive deafness because the discharge would cease or the hearing would return "when the child was seven." Not infrequently I have been assured that "the doctor" was responsible for this statement. I have sometimes wondered whether this amazing idea is the foundation for that glaring absurdity of our education law which enacts that the normal or blind child shall be educated when he reaches the age of 5, whilst instruction for the deaf child shall not be compulsory until he is 7!

Let us now consider the different groups of acquired causes in order that we may see how the number of cases due to their influence might be reduced by preventive measures.

The infective diseases.—The infectious fevers we have seen to be responsible for 26·3 per cent., or more than a quarter, of the acquired cases. Putting aside for the moment the consideration of the prevention of ear complications in these diseases, it is probable that as preventive medicine progresses the exanthemata will be rendered less severe in type and less frequent. The checking of epidemics by notification, isolation, and efficient school medical inspection must work to this end. A fine object-lesson has been given us during the past century by the effect of preventive medicine in small-pox. This terrible disease has been practically stamped out in Germany by compulsory vaccination, which has largely shorn it of its virulence in Great Britain, although it has been hampered in its operation by the malign influence of ignorant anti-vaccination cranks. Mygind[33] has shown that, in 1821, Itard declared "that small-pox is, or rather has been, a frequent cause of deaf-mutism," and that not less than 22·2 per cent. of the inmates of the Deaf and Dumb Institution in Leipsic in the years 1818–38 owed their deafness to this disease. From 1880 to 1885 the percentage for various countries varied from 2·4 to 0·0 only, and Mygind considers that this enormous reduction was due to compulsory vaccination. The statistics in my Table A above show that small-pox does not figure at all as a cause in my own cases, and was responsible for only 0·4 per cent. at Margate between 1880 and 1910, a period of 30 years. With the progress of research I see no reason why the other infectious fevers should not be similarly controlled and rendered impotent. Until then, however, attention must be turned to the better care of the ear during their attack. The practitioner must keep a ceaseless watch for aural complications; he must be educated to be on the alert for deafness and ear pain, and to interfere promptly himself or to urge the necessity for immediate expert advice. He must understand their mode of onset and endeavour to prevent them by dealing with the throat and nose complications which lead to their development. This would save numbers of ear complications in scarlet fever, measles, and diphtheria, which, as we have seen, are responsible for the bulk of the exanthematous acquired deaf-mute cases. These cases may be divided clinically into three groups—the catarrhal, the suppurative, and the labyrinthine. The first can be prevented by proper attention to the nose and throat, and the same measures would reduce the number of the second. When suppuration is threatened early incision of the tympanic membrane is imperative in its importance. It must be remembered, however, that in scarlet fever and diphtheria the condition sometimes begins, not as a middle-ear infection only, but as a primary suppurative osteitis of the temporal bone, and the importance of early mastoid operation to check its spread and to conserve the hearing has been well shown by Gordon,[34] who, in his papers on the subject, advocates very strongly the attachment of an otologist to all fever hospitals. Although other exanthemata bulk less largely in the causation of educational deafness than do measles, scarlet fever, and diphtheria, the treatment, preventive and immediate, of their ear complications is of no less importance. The occurrence of purulent otitis media is about 2·0 per cent. in enteric fever, but it was responsible for 0·33 per cent. of our acquired cases by causing nerve deafness. Mumps is still more rare as a cause of internal ear deafness, but when the complication occurs the destruction of hearing is swift and sudden. Treatment, to be successful, requires to be prompt and energetic, and every practitioner should be thoroughly alive to his responsibility in such cases and not allow his patient to become incurably deaf by hesitating as to the necessity of immediate aid. The same remark, indeed, applies to internal ear deafness in any of the infective diseases, and the whole question of efficient treatment lies in the proper education of the practitioner—a matter with which I shall deal later.

The deafness arising from *congenital syphilis* also requires prompt and energetic measures. Ordinary specific treatment is of no avail, and salvarsan is not to be employed without great caution so far as present knowledge goes. Alexander[35] has struck a warning note as to the possible effect of "606" on the auditory nerve. Some cases of congenital syphilis become deaf whilst undergoing ordinary specific treatment for the ocular manifestations. I know of one case at least that entered an ophthalmic hospital hearing and left it stone deaf, wherefore the cause of deafness was stated to be, on the school admission paper, "improper medical treatment." Promptly met by pilocarpine, or, better, by repeated blistering, the condition may in some cases be kept under. What is really required, however, is to strike at the root of the disease by making syphilis notifiable and preventing the marriage of those who are still able to communicate it. The present era is supposed to be one marked by its humanity, a humanity in which the bloodthirsty old Mosaic law which condemns the children to suffer for the sins of their fathers should have no place. Discarding cant and hypocrisy, we should set to work to stamp out syphilis as we endeavour to eradicate other infective fevers—by honest, reasonable, and consistent legislation.

As regards cases of educational deafness due to *diseases of the nervous system* not much can be said concerning prevention. The bulk of such cases are due, as we have seen, to meningitis, which is accountable for at least 10·9 per cent. One can only express a hope that, with the better treatment of meningitis and the causes which lead to it, the number of children in whom internal ear complications occur may be reduced. For this reason all forms of meningitis should be made notifiable.

Much can be done in the prevention of those cases due to *primary ear disease*. We have seen that the vast majority of them are eminently preventable. The figures convey so striking a lesson that they must be repeated. At least 74·2 per cent. of the suppurative and catarrhal middle-ear cases were dependent upon preventable causes—that is to say, 21·9 per cent. of the whole 592 acquired deaf-mutes. There is no doubt that the bulk of the profession has not yet reached to the serious recognition of the evils of adenoids and nasal diseases in infancy. I am not even sure that all otologists realise them, although they know them. A great deal has been written concerning adenoids since Meyer first drew attention to them, but a change has been noticeable of late in the tone of such writings. A more keen appreciation has been shown of the all-important need for *prophylaxis*. Such a tendency is noticeable, for example, in such papers as that by Gallois,[36] who describes the diseases that may result from infection from the naso-pharynx; or that by Güntzer[37] on "The Prophylaxis of the Oropharynx and Nasopharynx," in which he calls attention to pathological conditions involving the oro- and naso-pharynx, especially in acute infectious diseases, and complains of the neglect such conditions often meet with from the general practitioner. Güntzer points out that the causative micro-organisms of cerebro-spinal meningitis, scarlet fever, measles, pertussis, mumps, rheumatism, &c. (all diseases which figure as causes of deaf-mutism), all enter by the tonsils. A purely streptococcal inflammation of the throat would not be a rare affection were it more frequently recognised, and, indeed, Waldeyer's ring may be looked upon as the incubator for most of the infectious diseases. Looking back upon my own experience of ear disease in children I am struck by two wants, both of which require urgently to be satisfied if we are adequately to do our duty in the prevention of deafness not only in the young child but also in the adult. One is the necessity for the *prevention* of adenoids, the second is that for their *adequate* treatment when present. As regards the first,

[33] Loc. cit., p. 123.

[34] Transactions of the Otological Society, vol. vi., p. 120; vol. viii., p. 103.

[35] Boston Medical and Surgical Journal, vol. clxiv., p. 331.

[36] Archives Générales de Médecine, 1912, xci.

[37] Medical Record, 1911, vol. ii., p. 824.

education in hygiene, prevention of infectious fevers, the abolition of the pernicious "comforter," and attention to the many other factors that work for the health of the child before and during school-age all render important help. Recently Barraud, of Lausanne,[38] has pointed out that the improper artificial feeding of infants is a potent cause of adenoids. His contention reveals one of the weak spots in our preventive work; the fact that although we are now looking after the school child, it is the child *before* school age that we really ought to reach. The tendency at the present time is in this direction, but it is largely in the hands of a few enthusiastic workers, who appreciate the value of infant consultative clinics, that the movement lies, and it requires to be more widely taken up, so that a knowledge of the needs of the infant and the very young child is sown everywhere. The time to treat educational deafness due to otitis is before the otitis has developed, and to do this we must go back to the infant.

As I have already indicated, the tendency of otologists at the present day is more and more to realise and to put into practice the prophylaxis of the oro- and naso-pharynx, and much good work has been published lately thereon. But it is very far from sufficient that it is only the otologist who is working in this direction, for it is not the otologist who sees the child when prophylaxis is possible, but the general practitioner. It is the latter who requires education in these matters, and he must, among other things, learn to remove adenoids properly. In operating upon adenoids there are two points to be considered—their influence as a source of infection and their later influence upon the nose and ears. The nasopharynx is a cavity into which open numerous passages; it is, in fact, an anatomical meeting-place. As such it can, and does, easily become a centre alike for the reception and dissemination of infection. It is thus that adenoids are a source of danger to the child, for from them microbic infection may spread to ears, nose, or alimentary and respiratory passages. The removal of the main central mass of the growth, with its deep sulci full of mucus and infective organisms, may be sufficient to restore nasal respiration and to improve the child's health. But although this fulfils, to some extent, an important object of the operation, it is not sufficient, and in the apparent success may lie hidden a serious danger. It must always be borne in mind that the lymphoid tissue which forms the pharyngeal tonsil spreads into the lateral recesses behind the openings of the Eustachian tubes. These fossæ of Rosenmüller, as they are called, are coming more and more into prominence as of great importance in diseases of the ear. If they are not cleared out after the central mass of adenoids has been removed, the growths left in them will later on give rise to Eustachian tube troubles, which may result in middle-ear suppuration or in chronic catarrhal deafness. Clinical evidence in support of this assertion has been more easy to gather since the introduction of such naso-pharyngeal specula as those designed by Holmes and Yankauer. It is in the fossæ of Rosenmüller and at that part of the vault of the nasopharynx immediately adjacent to the arches of the posterior nares that adenoid masses are so often left by those who either do not appreciate the essentials of the adenoid operation or have not had sufficient practice in its performance. It is the children who have been thus imperfectly operated upon who come to the hospital or are seen at the school with a history of operation for adenoids which has "done no good," or after which the patient is allowed to have become more deaf. A second operation, by which the fossæ of Rosenmüller are efficiently cleared, will suffice to bring about an improvement. It is this neglect of the removal of the lateral portions of the growth that leads in later life to catarrhal deafness, due to adhesions in Rosenmüller's fossæ hampering the function of the Eustachian tubes.

Another point in dealing with adenoids is that their removal must not be looked upon as the end of treatment. In a large number of the cases met with the adenoids are septic and set up subacute or chronic rhinitis or pharyngitis. Hence removal should always be followed by a minute and repeated examination of the nasal fossæ and of the pharynx, so that the conditions left behind by the growths may be recognised and treated and buccal respiration replaced by nasal breathing. Until this is done conditions of infection will continue and a discharging ear will not clear up.

[38] Les Oreilles de nos Enfants, Lausanne, 1911, p. 9.

If the foregoing remarks appear somewhat of an indictment of the practitioner in regard to his treatment of children's ears, let me hasten to point out that, under present conditions, he is scarcely to blame in the matter. The real blame rests upon those who are responsible for medical education in this country. Otology has no place in the curriculum save in a general surgical way. I would plead strongly for a better recognition and more systematic teaching of its principles in our medical schools. Instead of being the Cinderella of the specialties, it should be ensured that no student receives a qualification to practise until he has a competent knowledge of the causes of ear disease and their prevention. It is true that there are plenty of good post-graduate courses, giving excellent teaching in otology, but post-graduate instruction does not meet the difficulty because it appeals only to the keen man who is anxious to keep up with his work and improve his knowledge or to the man who has sufficient leisure for it. The very hard-worked practitioner, especially the one with the poor-class practice, has no time or money to spend on such courses. The prevention of deafness (in which lies, I am sure, the future of otology) needs a *universal* knowledge on the part of the profession of the etiology and treatment of the causes leading to defective hearing, and such a universal knowledge can only be made possible by the recognition of otology as an important part of the syllabus. The importance of good hearing in the intellectual and moral development of children and the serious handicap of moderate or even slight degrees of deafness has been patent to a limited group of educationists and otologists for some time past. This group forms, however, but a small proportion of the community, and it is but lately that the full significance of the sense of hearing in education has become at all widely recognised. The long neglect of diseases of the ear, especially in infancy and childhood, has but comparatively recently given place to a better knowledge of their etiology and a better understanding of their treatment, whilst the work done upon the pathological conditions of the upper air passages, to which the great majority of them owe their origin, has supplied ample means for their prevention. There is still, however, an enormous number of children suffering from ear disease who are allowed to go untreated, some of whom fill our deaf schools and form the material for this article, whilst others become hopelessly deaf in after life and swell the numbers of physically defective citizens, but whose condition could have been prevented by timely and skilful intervention. It is an underestimation to say that of the children who thus suffer 50 per cent. are curable, and of the remainder a considerable proportion could be improved, whilst the greater number are preventable. The majority of these children come under the care of the general practitioner in the first instance and it is he, therefore, who should be educated to cope with them. It will be objected that the student of medicine has to assimilate an enormous mass of knowledge and is confronted already with a multiplicity of examinations, so that he has little or no time left for so-called "special" work. But there are certain broad principles of etiology and treatment in otology, and especially in otology as relating to children, that could be laid stress upon at the student period of the doctor's education without adding enormously to his work and which would be of very great assistance to him when he comes to practise. The student years are the plastic years, and it is then that the opportunity occurs for firmly planting knowledge. It would, therefore, be of great advantage if the various bodies which grant qualifications recognised the importance of pædiatric otology and ensured that the broad principles of preventive aural surgery were given due attention in the examinations which they conduct. In the heavy work of general practice men have little time to spare over ear cases, but a good working knowledge of the subject as affecting children, particularly in regard to the prompt recognition and treatment of the causes leading to aural disease, would have great influence in diminishing the number of deaf children and chronic ear discharges. Parental ignorance and parental prejudices have a great deal to answer for and are difficult to combat. The onus of the responsibility must rest upon the general practitioner, and he should, therefore, be equipped to meet it. The public supposes him to possess the knowledge, and it is by his attitude that parental ignorance and prejudice can best be dispelled. Let us, therefore, make sure that he is educated to his duty.

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THE DISTRIBUTION OF CHLOROFORM IN THE BLOOD.

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Buckmaster and Gardner[1] have shown that in chloroform anæsthesia the bulk of the chloroform is carried by the red corpuscles. Pohl[6] estimated the proportion in the corpuscles as two to four times that present in the serum. Nicloux[4] by a more accurate method estimated the amount in corpuscles as about 88 and in the plasma 12 per 100 parts of chloroform. The enormous difference in time of absorption and of elimination, and the very much more marked effects on the tissues of chloroform when given subcutaneously, suggested to us that the chloroform might be differently combined in the two cases. By inhalation the greater part of the chloroform combines loosely with the corpuscles and is rapidly absorbed and rapidly eliminated. A small moiety is sometimes found according to Noel Paton and Miss Lindsay[5] still present in the blood some hours after the anæsthetic, particularly when the animal anæsthetised has been confined in a cage after the administration. This might represent a remnant of the 12 per cent. in the plasma. When given subcutaneously the much slower absorption and elimination, and the consequent greater effect on the tissues, might be due to a firmer combination of the chloroform with some part of the serum—say, the proteins, as suggested by Moore and Roaf.[2] That the drug is differently fixed in the two cases is further suggested by the fact that a prolonged administration of chloroform by inhalation has very little effect on the liver and kidney tissues, whereas the administration of a very small amount hypodermically causes injury to the cells of these organs.

In carrying out the experiments the same procedure was observed in all cases. The rabbits were weighed, and then where they were anæsthetised by inhalation they were kept just under for one hour. They were then killed and rapidly bled an amount of 15 per cent. solution of potassium oxalate sufficient to prevent coagulation of the blood. The blood mixture was then centrifugalised for three hours, and the corpuscles and plasma were separately estimated for chloroform. The method of Nicloux[3] was used throughout the estimation.

The time taken for centrifugalising—three hours—is the same as was adopted by Nicloux, and yielded more constant results than any shorter time. As an objection against such a lengthy separation may be argued that both corpuscles and chloroform would be driven to the bottom of the tube, and thus the proportion in corpuscles would rise with prolonged separation. This, as a matter of fact, is the case, but may also be due to the separation being more complete. Where the centrifugalising has gone on for one hour the corpuscles plus chloroform are mixed with a certain amount of plasma plus its chloroform; in the latter case the chloroform content is small and tends to reduce the proportion of chloroform in the mass. At the end of three hours the amount of plasma and chloroform with the corpuscles is very small indeed, and is negligible. In any case, the same procedure was adopted with both inhalation and injection specimens, so that the results are comparable.

Where chloroform was given subcutaneously amounts varying from 1 c.c. to 3 c.c. were given, and the animals were killed and bled as above two to three hours later. The amount of chloroform in the blood approaches a maximum two to four hours after the administration.[5] The results are:—

1. *By Inhalation.*

Rabbit D.—Weight, 1800 grm. Chloroform inhaled for one hour. 35 c.c. of blood taken with 1 c.c. of 15 per cent. potassium oxalate; centrifugalised for three hours. Total amount recovered, 18·13 mg. chloroform. Corpuscles, 90·8 per cent.; plasma, 9·2 per cent. of total chloroform present.

Rabbit M.—Weight, 2200 grm. Chloroform inhaled for 45 minutes. 58 c.c. of blood taken with 2 c.c. of 15 per cent. potassium oxalate; centrifugalised for three hours. Total amount recovered, 26·56 mg. chloroform. Corpuscles, 90·2 per cent.; plasma, 9·8 per cent. of total chloroform present.

Rabbit P.—Weight, 1850 grm. Chloroform inhaled for one hour. 35 c.c. blood with 5 c.c. potassium oxalate; centrifugalised for three hours. Total amount recovered, 6·3 mg. chloroform. Corpuscles, 88·8 per cent.; plasma, 11·2 per cent. of total chloroform present.

Rabbit R.—Weight, 1900 grm. Chloroform inhaled for one hour. 38 c.c. of blood with 5 c.c. of potassium oxalate; centrifugalised for two and a half hours. Total chloroform recovered, 16·45 mg. Corpuscles, 88·9 per cent.; plasma, 11·1 per cent. of total chloroform present.

Rabbit S.—Weight, 2400 grm. Chloroform inhaled for one hour. 45 c.c. of blood with 5 c.c. of potassium oxalate; centrifugalised three hours. Total amount recovered, 14·84 mg. chloroform. Corpuscles, 87·6 per cent.; plasma, 12·4 per cent. of total chloroform present.

Rabbit Z.—Weight, 1800 grm. Chloroform inhaled for one hour. 40 c.c. of blood with 5 c.c. of potassium oxalate; centrifugalised for two hours. Total amount recovered, 14·84 mg. chloroform. Corpuscles, 85·2 per cent.; plasma, 14·8 per cent. of total chloroform present.

Average distribution in six rabbits: Corpuscles, 88·6 per cent.; plasma, 11·4 per cent. of total chloroform present.

2. *By Injection.*

Rabbit C.—Weight, 2400 grm. 1 c.c. injected; animal killed four hours later. 40 c.c. blood taken with 1 c.c. of potassium oxalate; centrifugalised three hours. Total amount recovered 7·9 mg. chloroform. Corpuscles, 81·6 per cent.; plasma, 18·4 per cent. of total chloroform recovered.

Rabbit G.—Weight, 2975 grm. 2 c.c. injected; animal killed two and a half hours later. 42 c.c. blood with 1 c.c. potassium oxalate; centrifugalised for three hours. Total amount recovered, 6·21 mg. chloroform. Corpuscles, 76·4 per cent.; plasma, 23·6 per cent. of total chloroform present.

Rabbit H.—Weight, 1450 grm. 1·5 c.c. injected and repeated in 15 minutes. 30 c.c. blood and 1 c.c. potassium oxalate; animal killed two hours later; centrifugalised three hours. Total amount recovered, 8·25 mg. chloroform. Corpuscles, 78 per cent.; plasma 22 per cent. of total chloroform present.

Rabbit Q.—Weight, 2300 grm. 3 c.c. injected and rabbit killed three hours later. 40 c.c. blood and 5 c.c. potassium oxalate; centrifugalised three hours. Total amount recovered, 5·88 mg. chloroform. Corpuscles, 74·8 per cent.; plasma, 25·2 per cent. of total chloroform present.

Rabbit T.—Weight, 2200 grm. 3 c.c. injected. 40 c.c. blood taken with 5 c.c. oxalate. Total amount recovered, 9·38 mg. chloroform. Corpuscles, 79·9 per cent.; plasma, 20·1 per cent. of total chloroform present.

Rabbit Y.—Weight 2050 grm. 3 c.c. injected. Animal killed two hours later. 40 c.c. blood taken with 10 c.c. oxalate; centrifugalised three hours. Total amount recovered, 10·84 mg. chloroform. Corpuscles, 72·4 per cent.; plasma, 27·6 per cent. of total chloroform present.

Average distribution in six rabbits:—Corpuscles, 77·2 per cent.; plasma, 22·8 per cent. of total chloroform present.

Consideration of Results.

Where the chloroform was inhaled the amount found in the plasma varied from 9·2 to 14·8 per cent. of the total amount recovered from the blood. Where the chloroform was injected the amount found in the plasma varied from 18·4 to 27·6 per cent. of the total amount recovered from the blood. Thus in all cases where the chloroform was given subcutaneously the amount recovered from the plasma was much more than where the anæsthetic was inhaled. The delayed elimination therefore appears to be due to the different fixation of the drug in these cases.

The corpuscles appear to part with the chloroform rapidly, and after anæsthesia by inhalation the proportion held by the corpuscles is rapidly eliminated. Probably this is also the case with the proportion of chloroform held by the corpuscles after injection, but the difficulty of getting rid of the amount in the plasma seems to account for the delay in elimination and the injury to kindey and liver tissue.

These results suggest that in cases of delayed chloroform poisoning the distribution of the anæsthetic in the blood may more closely approximate to that of rabbits after injection of chloroform. The amount in the plasma varies within fairly wide limits, and this variation may be due to a variety of causes. Anything which would cause a larger proportion than usual of the chloroform in the blood to combine with the plasma constituents might cause a delayed elimination of the drug, and consequently injury to liver and kidney tissue.

It is of interest to note that in one rabbit which died just before the chloroform inhalation was stopped—after one hour inhalation—the amount of chloroform recovered was 22·24 mg. in 35 c.c. of blood, and of this the corpuscles contained 67·7 per cent. and the plasma 32·3 per cent., so that the fatal result was at least associated with a large percentage of chloroform in the plasma.

Summary.—Evidence is given that in rabbits the blood contains a larger proportion of chloroform in the plasma when the anæsthetic is given subcutaneously than when it is given as an inhalation. This is considered to be the reason for the delay in elimination and the consequent greater injury to the tissues which is associated with this mode of administration.

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Bibliography.—1. Buckmaster and Gardiner: Proceedings of the Royal Society, B, vol. lxxix., 1907. 2. Moore and Roaf: Ibid., B, vol. lxxvii., 1905. 3. Nicloux, M.: Bulletin de la Société Chimique de

Paris. 4. Nicloux, M.: Comptes Rendus de la Société de Biologie, vol. lx., p. 248. 5. Noël Paton and Miss Lindsay: Proceedings of the Royal Society of Edinburgh, vol. xxviii., 1908. 6. Pohl, J.: Archiv für Experimentelle Pathologie und Pharmakologie, Band xxxviii., 1890–91.

TWO UNUSUAL FORMS OF MENINGITIS OCCURRING IN INFANCY.

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THE two following cases of meningitis, which have come under our observation during the past year, seem worthy of record: the first on account of a curious dual and at the same time successive infection, and the second on account of the rarity of the exciting organism.

CASE 1. *Meningitis dependent on (a) a leptothrix; (b) the tubercle bacillus.*—The patient was an infant aged 10 months, who was originally brought to the Queen's Hospital for Children as an out-patient on Dec. 13th, 1911, for wasting. The diet was re-arranged and when the baby was seen again on Dec. 20th everything seemed very satisfactory, there being a gain of 7 oz. in weight. On the 23rd, however, the child appeared unwell, refused food, was sleepy, and took little or no notice of his mother. When seen again on Dec. 27th he was distinctly drowsy and very irritable on examination. The abdomen was slightly retracted, the reflexes very brisk, and the fontanelle moderately distended; the temperature was 101° F., and the child had lost 6 oz. in weight. There was, however, no rigidity of the neck, no screaming, or other positive signs of meningitis. The infant was admitted into hospital with a provisional diagnosis of meningitis. Two days later (on Dec. 29th) lumbar puncture was performed, and about 2 c.c. of purulent cerebro-spinal fluid was withdrawn. The temperature, which had ranged between 100°–103°, now dropped to normal, but rose again on the 31st to 101°. Lumbar puncture was again performed, with the same result. After the second lumbar puncture the drowsiness and irritability disappeared, the child could sit up, took its feeds well, and displayed a fair amount of interest in its rattle. In fact, except for a considerable degree of temperature, there were no indications that the child was other than a badly fed infant; there were certainly none to indicate a purulent meningitis.

An examination of the cerebro-spinal fluid withdrawn on Dec. 29th showed an intense polynuclear leucocytosis, while a culture yielded a pure growth of a very active motile bacillus. The morphological and cultural aspects of this organism were as follows. Growth occurred on all ordinary media—e.g., plain broth, plain agar, glucose and maltose agar; it also grew on gelatine at 20° without liquefaction. On solid media the colonies were smooth, raised, white and opaque, and not confluent. These colonies did not usually appear in less than 72 hours, but growth took place a little more quickly on media containing whole blood or hæmoglobin. The colonies themselves consisted of: (1) filaments up to 100μ long, unbranched, and showing a wave-like motion in fluid media; (2) short and very actively motile bacillary forms. Both forms were Gram-negative. Repeated plating and fishing of single colonies and repeated subcultivation never succeeded in separating the two forms. This organism when grown in sugar media gave the following reactions: glucose −; lactose −; saccharose −; lævulose −; raffinose −; galactose −; salicin +; inulin −; coniferin −; dulcite −; sorbite −; mannite +; glycerine −; milk −. Finally this organism (1) did not originate any change in neutral red; (2) did not form gas in any media; (3) did not form indol in peptone water; and (4) did not grow under anaerobic conditions. On these grounds this organism was considered to be a leptothrix.

On Jan. 1st, after lumbar puncture, the cerebro-spinal fluid proved much clearer than on previous occasions and the cultures were sterile. On the 3rd, except for a temperature, the child seemed very much better and appeared well on the road to recovery. On the 8th, as the temperature still rose of an evening to 103° or 104°, lumbar puncture was again performed. The fluid was again very turbid, and cultures from it yielded a pure growth of the original organism. From the 8th to the 14th there was practically no change in the infant's condition, the weight was stationary, and the temperature was descending by lysis. From all points of view the infant was holding his own.

On Jan. 15th, however, the child was sick and on the 16th he was noticed to squint. On the 17th there was repeated vomiting. On the 19th the head and abdomen became retracted and the infant began to waste rapidly. On the 19th and 22nd doses of vaccine were given and a few days later the temperature became normal. On the 27th wasting was extreme, rigidity was general, and there was well-marked opisthotonos. Lumbar puncture at this date yielded a fluid identical in opacity and constituents with the preceding. On the 30th a third dose of vaccine was given. The temperature was still normal. On Feb. 6th the general symptoms remained the same, but there was a sudden rise of temperature, which now maintained an irregular course until the day of death. On the 13th a fourth dose of vaccine was administered, and five days later lumbar puncture was again resorted to. The cerebro-spinal fluid now proved to be clear save for a small coagulum. Albumin was present (0·25 per cent., Aufrecht). Cultures made from the fluid were sterile, but the films made from the coagulum showed tubercle bacilli in fair numbers. Progress from this date was steadily downhill. Rosenbach's tuberculin (0·01 c.c.) was given on the 21st and on succeeding dates, but without any influence on the usual termination. Death, however, was postponed until as long as March 28th.

The post-mortem examination in this case showed the usual typical pathological changes associated as a rule with tuberculous meningitis, and in addition a slight tuberculous deposit in the bronchial glands.

The interesting features of this case are, we think: (1) The long duration of the case—viz., 14 weeks; (2) the appearance in the first instance of a suppurative meningitis due apparently to a leptothrix alone; (3) the slight initial symptoms associated with this form of suppurative meningitis; and (4) the apparent tendency to recovery from this infection which was prevented by the very unusual sequence of a secondary infection of the meninges by the tubercle bacillus. It may be said that this was really all the time a double synchronous infection and not a successive condition; to that we would say that the sudden onset, the preliminary stages, the appearance and contents of the cerebro-spinal fluid, and especially the long duration of the illness, were all against an original tuberculous infection.

CASE 2. *Meningitis dependent on bacillus coli communis.*—The patient was an infant aged 5 months, whose history is as follows. On the night of March 2nd the child woke and commenced to scream. She was sick once. The attacks of screaming and irritability continued until the 6th, when the infant had a convulsion, and was then admitted into hospital with a provisional diagnosis of meningitis. On admission the child was found to be well nourished, and no disease of the circulatory or respiratory systems could be detected, nor was there any evidence of any gastro-intestinal disturbance. All four limbs were, however, spastic, the deep reflexes were increased, and Kernig's sign was well marked. There were slight drowsiness and distinct irritability on interference, while the fontanelle was full but not tense. On the 9th the spasticity was more marked, the head was slightly retracted, and there was pain in the neck on movement; a convergent strabismus had appeared and the fontanelle was now distinctly bulging. The child had vomited once or twice and the temperature was raised at night to 103°, being two or three degrees lower in the mornings. Consciousness and mental irritability were less marked and drowsiness was the more prominent feature. An examination of the fundus showed no pathological changes. Lumbar puncture was performed on the 9th, and a quantity of opalescent fluid flowed freely into the receiver. This fluid was found to contain a quantity of albumin, a trace of globulin, and no reducing bodies. Films made from the fluid revealed a large number of mono- and poly-morphonuclear leucocytes in about equal proportions. In addition to these changes a large number of Gram-negative motile bacilli were present. Cultures from this fluid gave a pure

growth of a Gram-negative bacillus on both agar and nasgar. A further examination of this organism in various culture media gave the following results:—

Gelatine.	Milk.	Peptone water.									Indol reaction.
		Glucose.	Lactose.	Saccharose.	Mannite.	Dulcite.	Adonite.	Sorbite.	Inosite.	Inulin.	
No liquefaction.	A. C.	A. G.	A. G.	—	A. G.	A. G.	—	A. G.	—	—	Present +

A. = acid, C. = clot, G. = gas.

It will be seen that these reactions are, beyond doubt, those usually associated with the presence of the bacillus coli. A vaccine was prepared and a dose was administered on March 11th. This was followed by a marked reaction, and, as will be seen later, by apparently a period of marked improvement. On the 13th lumbar puncture was again performed, and a quantity of fluid under considerable pressure was withdrawn having the same cytological appearances as before and containing again a number of the Gram-negative bacilli. Cultures, however, from this specimen after 48 hours' incubation remained sterile. On the 14th and 15th the child was less drowsy, the fontanelle not distended, while the spasticity, irritability, and retraction of the head were less marked. The pulse, which had been 160, dropped to 120, and the temperature gave signs of returning to normal. The whole appearance of the child on the 14th and 15th suggested that she was progressing favourably. On the afternoon of the 16th, however, she died quite suddenly. A necropsy was unfortunately refused.

The infection in this case seems to have been a primary one. Catheter specimens of the urine proved sterile, and at no time was there any evidence of any gastro-intestinal affection. Primary bacillus coli meningitis appears to be either a very little noted or an extremely rare complaint. An examination of a large quantity of literature, as also the records of Guy's Hospital for the six years 1905–10 inclusive, confirms this statement. At Guy's Hospital during the years mentioned the organism was detected during life or after death in the cerebro-spinal fluid in 22 cases comprising many different disorders. Of these it appeared in the cerebro-spinal fluid during life in only six cases. In these six cases it was only present by direct examination in one case, and it only occurred in one instance amongst these six unassociated with other organisms. As this last only concerns us it is interesting to note that in this case there was no confirmation by a second lumbar puncture, no confirmation by a post mortem, the organism was not present on direct examination, and the clinical diagnosis was cerebral abscess. In the 16 remaining cases it was found in cultivations made from the cerebro-spinal fluid after death. In 14 of these it occurred with numerous other organisms and was in most cases thought to be a contamination or perhaps a terminal infection. In the two cases where it occurred by itself one was a case of suppurating spina bifida whence the infection is obvious, and the second was in a case of middle-ear disease with suppurative meningitis. With regard to the presence of the bacillus coli in post-mortem cerebro-spinal fluid, it should be noted that Sacquépée showed that a terminal infection of the meninges by this organism was possible when the meninges had been previously infected.

If we refer to the literature of this subject we find it very scanty. Holt mentions two cases; both were aged 4 weeks. In the first case there were hyperæthesia, rigidity, and purulent cerebro-spinal fluid containing bacillus coli communis, and the infant died in ten days. No necropsy was obtained. The second infant developed meningitis following a bacillus coli infection of the bladder. This child recovered, but with secondary hydrocephalus. MM. Nobécourt and Du Pasquier describe a third case of suppurative meningitis in a child of 7 months also dependent on the bacillus coli. This case, which occurred during an attack of diarrhœa, recovered in a month's time without any sequelæ. A fourth, a fatal case, is recorded by Noeggerath in a child 16 days old, in which infection was doubtfully by bowel or from the umbilicus. The three remaining cases, all in infants a few days old, are reported by Scherer. These three were, however, recorded at a date—viz., 1895—which can hardly be described as satisfactory from the bacteriological point of view, since the separation and identification of the coli group have been a work of more recent years. In addition to these cases, Concetti discovered the bacillus coli in cases of serous meningitis associated with gastro-intestinal symptoms. The four patients in question were all infants, two of whom died, and two of whom recovered completely without sequelæ.

From a review of these recorded cases it would appear that primary B. coli meningitis is a disease of infancy and manifests itself in two forms—(*a*) as a serous meningitis, (*b*) as a suppurative meningitis. Further consideration shows us that as regards symptoms the disease is indeterminable from other types of acute meningitis, while as regards prognosis it is by no means invariably fatal. If we disregard Scherer's cases, only 50 per cent. proved immediately fatal. Recovery may be presumably complete or be attended by sequelæ such as may follow any acute meningitis—namely, mental deficiency, hydrocephalus, loss of special senses, &c. A differential diagnosis from other types of meningitis can only be made by a careful examination of the contents of the cerebro-spinal fluid which should reveal the presence of the pneumococcus, tubercle bacillus, or other offending organism. Where typhoid is in dispute, a Widal reaction and the separate cultural features of the two organisms will easily distinguish them.

Since writing these notes our attention has been drawn to another fatal case of B. coli meningitis reported by Pearson and occurring at the East London Hospital for Children. This case was also an infant and his meningitis was of the suppurative type. In conclusion, we should like to express our indebtedness to Dr. John Eyre for his kindness in permitting us to make use of the bacteriological records under his care at Guy's Hospital.

Bibliography.—1. Scherer: Jahrbuch für Kinderheilkunde, Band xxxix., 1895. 2. P. Nobécourt et Du Pasquier: Bulletin de la Société de Pédiatrie de Paris, 1902, p. 371. 3. Noeggerath: Münchener Medizinische Wochenschrift, 1907, No. 13. 4. L. E. Holt: American Journal of Children's Diseases, 1911. 5. Sacquépée: Société Médecine des Hôpitaux de Paris, July 11th, 1902. 6. Concetti: 13me Congrès de Médecine, Paris, 1900, Section de Pédiatrie. 7. Hutinel: Maladies des Enfants, vol. iii., p. 166. 8. Pearson: THE LANCET, March 16th, 1912.

TWO CASES OF PULSATING EXOPHTHALMOS, IN WHICH THE CAROTID ARTERY WAS LIGATURED.

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CASES of pulsating exophthalmos are not very common, only about 20 having been published in England so far as we have been able to discover since Frost's classical paper in the Transactions of the Ophthalmological Society, 1884 (Vol. III.).

Ligature of the carotid appears to have been practised in about half of these cases, and while there is nothing very unusual in our two cases, yet in our opinion they are worth recording. Both cases must be looked upon as examples of arterio-venous communication, presumably in the cavernous sinus, secondary to a fracture of the base of the skull.

CASE 1.—The patient was a man aged 45, admitted to the hospital in February, 1906, under the care of Mr. F. Jaffrey, when one of us (R. R. J.) was the ophthalmic house surgeon and the other (W. F. F.) the surgical registrar. The history was as follows. The man fell head first into an empty swimming bath, a distance of 9 ft., and was reported to have been unconscious afterwards for 20 minutes.

On admission the patient was conscious, and had not vomited. There was a scalp wound and some bruising over the right fronto-parietal region, with bleeding from the nose, and a double black eye; the right pupil was semi-dilated and sluggish in its reaction to light, while the reaction on the left side was brisk. On the next day there was very extensive subconjunctival ecchymosis on both sides, that on the left

being most marked. Ten days later it was noted that ptosis was present on the left side, and the ophthalmic surgeon reported a pulsating exophthalmos. This was treated with rest in bed and a pressure bandage. Three weeks later the ophthalmic surgeon having been asked to see the man again found a commencing keratitis e lagophthalmo, and promptly sewed the lids together. Three days afterwards the left common carotid was tied in the neck by Mr. Jaffrey. The man made an uninterrupted recovery from this operation and went to the convalescent home with his lids adherent to each other.

After a couple of months the patient returned. There was then no exophthalmos or pulsation in the orbit, and on the lids being separated it was found that the left palpebral fissure was slightly smaller than the right, the left pupil was rather contracted, and that the vision of the left eye was 6/18, that of the right 6/6. The ophthalmic department unfortunately have no further note of his attendance, and when we wrote to him early in the present year asking him to come up for examination, our letter was returned through the Dead-letter Office.

CASE 2.—The patient was a female, aged 53, who was admitted into the ophthalmic ward on Sept. 18th, 1911, with the following history. Four and a half weeks before she had tumbled down the area steps. She was picked up unconscious, with a small wound over the right external angular process, and was put to bed for three weeks. As soon as she began to get about again she complained of right-sided headache, and soon afterwards the right eye began to "swell." By the courtesy of her medical attendant, Dr. J. R. Haynes, we have been supplied with the following notes. She made a normal recovery from her initial head injury; for the first few days there had been considerable subconjunctival ecchymosis, but this had been rapidly absorbed; there was no ocular palsy, and the pupillary reactions were normal till she got up. It was then found that there was right-sided ptosis and that the globe was pushed forwards and remained motionless, the pupil was semi-dilated and fixed, and some conjunctival swelling was present.

On admission (Sept. 18th, 1911) it was found that right-sided ptosis with proptosis was present, and moderate œdema of the ocular conjunctiva, which was studded with dilated veins. There was, in fact, obvious venous obstruction. All movements were abolished, and the pupil was dilated and fixed. Vision was reduced to counting fingers at 6 feet, and ophthalmoscopically there was very marked venous pulsation on the disc. It seemed almost as if the disc were jumping forwards at each beat. Pulsation of the globe could not be made out with certainty, and she was put to bed with a pressure bandage, and given iodides internally. On Sept. 20th definite pulsation could be felt in the orbit, and a faint systolic bruit could be heard over the right temporal fossa. On the 25th the proptosis had increased in spite of pressure and large doses of iodides, and the patient was much troubled with headache and a buzzing noise in the head; the bruit could be heard plainly over the eye, forehead, vertex, and temporal fossa.

As the pulsation was decidedly increasing the right internal carotid was tied just above the bifurcation on the 26th (W. F. F.) and when the operation was completed no pulsation could be felt in the eye. No difficulty was experienced with the operation. On the following day the proptosis was somewhat less marked, and there was a very faint return of pulsation in the eye. Early in October, as the conjunctiva had remained a good deal swollen, the lids were stitched together (R. R. J.). The patient was discharged on Nov. 2nd, with lids separated, slight proptosis, very slight œdema of the conjunctiva and fulness of the veins, and fairly marked pulsation on the disc. The globe no longer pulsated, but all movements were completely lost, and a faint systolic bruit could be heard all over the head. Since the operation, however, the headache had entirely ceased, and there had been no return of the buzzing noise in the head.

The subsequent progress has been as follows. A fortnight after discharge there was again no pulsation, and slight movement of the lid and globe in an upward direction had returned. On Dec. 8th the proptosis was only slightly marked, the bruit could be heard as before, and there was slight return of movement of the globe in an upward, downward, and inward direction, while there was very fair power in the lid. Now for the first time it was noticed that she had complete left sixth nerve palsy. By March 19th, 1912, the remaining proptosis was very slight and the bruit faint; the lid had completely recovered its movements, while the globe was moved upwards well, the downward and inward movements being not quite so extensive. We may mention also that there had never been any marked interference in function with the ophthalmic division of the fifth nerve.

When examined early in May, 1912, the general condition was as before—the eye was moderately convergent, and it could not be brought quite to the mid-line; upward and downward movement was fair; vision was: R.Hm. 1·5 = 6/18; L.Hm. 1·5 = 6/6. There was slight pallor of the disc, with no very marked pulsation. Both external recti remained paralysed. Since the operation she has been perfectly free from her distressing symptoms and headache.

While it is, of course, impossible to say that these two cases would not have done just as well eventually had they been left to themselves, yet in our opinion the operation did good service by bringing about a cessation of headache and buzzing, and thereby allowing the patients to get some much-needed sleep. We have a vivid recollection of the pitiable state the first patient was reduced to before the vessel was ligatured. In conclusion, we wish to express our thanks to Mr. Jaffrey and Mr. H. B. Grimsdale for allowing us to make use of the notes of the first of these two cases.

Reviews and Notices of Books.

The Mastery of Life. By G. T. WRENCH, M.D. Lond. London: Stephen Swift and Co. 1912. Pp. 516. Price 15*s.* net.

A GLANCE at the list of Dr. Wrench's degrees and the roll of posts he has held is sufficient to assure us that he cannot have been able to devote much time to the minute study of ancient and mediæval history, with such trifles as the architecture and other arts of the various periods thrown in. But in spite of this the book well deserves the attention of the critical historian and the student of sociology.

The thesis which the author attempts to sustain is that all the races of peoples, or nations of Euro-Asia, fall under one of two heads—one being "particularists," or individualists, in their social construction, working each man for himself or united into very small family groups, the source of power being fear and the force of arms; the other group consisting of peoples apt for discipline in large masses, ready to submit to the "ruler mind," and likely to produce the ruler. These are "patriarchalists," united by the "positive" feeling of mutual affection and liking, in contrast to the "negative" distrust and mutual dislike of the "particularist." Having made this somewhat rigid group distinction it remains to squeeze existing racial forms into the moulds. The "Aryan" has of late become so discredited as a racial entity by ethnologists that it is refreshing to find that Dr. Wrench recognises his existence at all. In his opinion, derived from von Ihering, the Aryan—and the Saxon is the most pronounced type of Aryan—stands for the "particularist," "negative" system, whilst the Mediterranean races of Professor G. Sergi stand for the "patriarchal" and "positive" system. From the former have descended the democratic social forms of the Teutonic peoples; from the latter the monarchical systems of the Latin races, and the earlier Egyptian, Mycenæan, Accadian, and other stocks of the Middle East.

The vice of character of the Aryan group expresses itself in a lack of architecture in particular, as well as in limitation of subsidiary arts, a feebleness in literature, and a general failure in all the qualities, including cookery, which produce a "mastery of life." The analysis of racial temperament, and the criticism of architecture and art employed by the author in the support

of this theory, are both thoughtful and interesting, but they do not indicate a profound technical knowledge of the subjects. It may be true in the main that the Indo-Germanic, or Aryan, races have been inferior in architecture and the pictorial arts, but when they have risen above the average they have displayed a remarkable originality and sense of beauty, notably in the Gothic, or Frankish, architecture, which Dr. Wrench holds in such low esteem. Music, we know, has reached a pitch of perfection among the Teutonic races which it has never attained elsewhere, but Dr. Wrench shares with Benvenuto Cellini the opinion that music is "damnable." He sees nothing of value in the painting of Northern Europe, including France: Rembrandt and the Dutch painters receive a full measure of his scorn, and the great landscape painters of France and England express nothing but pessimism and "subjects realism." One of the best chapters is the account of the rise of modern French painting and its correlation with changes in political construction in France. But many competent authorities are doubtful if there has been as much change in the direction of democratic individualism in France as at first appears. Before being so certain on the subject Dr. Wrench might first carefully peruse Mr. Bodley's works andfollow the perusal with a residence in a few French provincial towns. The ideas and suggestions in the account of the mixed ethnology of Greece of the Ægean are excellent, and the growth of Greek art is very well indicated. Greek sculpture has never been rivalled anywhere in the world, and it is probable that its perfection was the result of the graft of Aryan realism on the technical skill of Egypt and Mycenæ. But the reader will perhaps go back to Buckle and ask whether this glyptic mastery would have been attained without the marble of Pentelicus.

The book ends with a piteous expression of pessimism: there is no hope for the Germanic races and none for democracy. "Neurasthenia is the creation of democracy, as it is also the abundant expression of the need of health and strength." The author cares nothing for any political shibboleths, and is unable to see any good in the tendencies of modern democracy. Democracy is quite unable to value intellectual work; it has no aim but the acquirement of riches and freedom from toil. Democracy is in effect the parent of capitalism. The "progress" of modern nations, especially the Teutonic races of Germany, England, and the United States, is purely materialistic and all on wrong lines.

However much we may disagree with this attitude of mind, and whatever valuation we may put upon the author's arguments and conclusions, it must be agreed that the volume is full of sound thought and information. It is of the highest interest to find a mind obviously fresh to all of the diverse subjects under consideration taking such broad standing ground and arranging such a lucid picture. The daring of the attempt can excite nothing but admiration. Though Dr. Wrench may be wrong in many of his data, and much of his deduction, he will certainly set his readers thinking.

Handbuch der Gesamten Medizinischen Anwendungen der Elektrizität. By H. BORUTTAU and L. MANN. Vol. II., Part 2. Leipsic: Werner Klinkhardt. 1911. Pp. 411–1101. Price 30 marks, or bound, 32.50 marks.

THIS is the second half of the second volume of Boruttau's monumental "Handbook of Medical Electricity." The two previous parts have already been reviewed in THE LANCET. The present volume is devoted entirely to electrotherapy and physiotherapy.

The first chapter, on general electrotherapy, is from the pen of Professor Wertheim Salomonson, and the chapters on the special electrotherapy of different organs are written by some of the best-known specialists in the various subjects, among whom we may mention Bergonié on high frequency, Laquerrière on women's diseases, Galli on disease of the internal organs, Mendelssohn, Ludwig Mann, and Meissner. In the article on general electrotherapy, Professor Salomonson discusses at great length the various modalities of electric treatment, the list of which is already a formidable one and has been greatly increased of late. We need only allude to galvanic and faradic massage, the Leduc current, ionotherapy, galvano-faradisation, the condensator current for treatment and muscle testing, sinusoidal currents, thermopenetration, and, the most recent of all, electromagnetotherapy. The final section of the book is devoted to modes of treatment in which electricity is merely the agent and not the curative factor. These include vibratory massage, radiant heat, electrolysis, cataphoresis, galvanocaustics, and phototherapy. The chapter on cataphoresis, by Meissner, is of great interest. He supports the theory of cataphoresis as opposed to ionic penetration, the mechanical driving of the undissociated atoms into the tissues by the electric current, rather than the purely electrolytic theory of the passage of charged ions or dissociated molecules as generally held.

The book is well illustrated, and all the labour connected with it has been carried out with that thoroughness and exhaustive attention to details which characterise the best German scientific work. We await with interest the concluding volume, which will deal with Roentgen technique and will be issued shortly under the editorship of Professor Levy-Dorn and Professor Krause.

The Conquest of Nerves. By J. W. COURTNEY, M.D. New York: The Macmillan Company. 1911. Pp. 209. Price 5*s.* 6*d.* net.

OF the various methods of dealing with the neurasthenic, hysteric, or psychasthenic patient from the standpoint of therapeutics, there are two or three which commend themselves to modern medical science more particularly, and each has its own coterie of advocates. These methods are (1) hypnosis and hypnotic suggestion, and suggestion without hypnosis; (2) psycho-analysis; (3) self-discipline and re-education. Whichever be the method employed, the physician ought to take the patient into his confidence and explain, as far as may be, the why and the wherefore of his procedure, else he runs the risk of defeating his own ends by enshrouding his technique in a veil of mystery. As it is, the intelligent patient is often too bewildered by the indiscriminate use of such expressions as auto-suggestion, psychotherapy, subliminal mind, subconsciousness, and so on, to be able to appreciate the efforts which the physician is making to effect a cure, and may be led to expect the intervention on his behalf of some vague subtle curative force whose potency is in inverse proportion to his knowledge of its working. It seems to be inevitable in these days that the patient should have thrust into his hands various brochures and booklets dealing glibly with so-called psychotherapy, and luring him either to some patent medicine or to some religio-medical cult, whose existence usually turns out to be more or less ephemeral; but if it is desirable to put into his hands something for him to mark, learn, and inwardly digest, then the physician cannot do better than give him a copy of the little book under review, for in it sound medical knowledge and commonsense are intermingled, and by its help he will ere long find how to work out his own salvation.

We have read this "manual of self-help" through, and appreciate the author's contention that mind is not the

absolute master of the body, but that both alike may be implicated and demand the same attention, and we can cordially recommend the busy practitioner to acquaint himself with the contents of the book: not only will it supply him with excellent hints for the treatment of functional disorders, but it will also furnish him with material to combat the pretensions of those who see in "Christian Science" and allied movements the one and only royal road to health.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. New Series. No. 50. *Preliminary Report of an Investigation into the Etiology of Oriental Sore in Cambay.* By Captain W. S. PATTON, M.B. Edin., I.M.S., Officiating Director, King Institute of Preventive Medicine, Madras. Calcutta: Superintendent of Government Printing. 1912. Pp. 21. Price 6 annas.

THIS is a third contribution by Captain Patton to the study of the causation and mode of spread of the leishmaniosis group of affections, the two former having been concerned with the development of the Leishman-Donovan parasite within the body of the bed-bug.[1] In the present memoir the author relates a series of experiments, undertaken in 1910 at Cambay, the capital of a small feudatory State of the same name in the Bombay Presidency, with a view to discover the mode of transmission of the parasite. Oriental Sore has existed in the town for 250 years, but appears to be strictly localised, and hardly ever occurs in the surrounding country. In his first experiments Captain Patton failed to find any evidence of transmission by means of flies (contrary to the views of Dr. R. Row, of Bombay). Simple sores and ulcers, so very commonly present, and so frequently visited b flies, did not become infected, even when the whitish discharge (containing leishmania) was rubbed over their surface. The next point was to investigate the behaviour of the parasite within the body of the fly. It could not be recovered later than six hours after ingestion, and then only from the midgut. The fly's alimentary tract is not a suitable nidus for the development of the parasite, which never therein becomes a flagellate, but soon disintegrates and disappears. Moreover, the disease does not spread in the fly season. Thirdly, lice, both P. capitis and P. vestimenti, were fed on blood from the sores. No parasite could be recovered from their alimentary tracts. Stegomyia also was fed on the infective material, but no parasites could be recovered from these mosquitoes.

Captain Patton then describes his researches as to the part played by the bed-bug, Cimex rotundatus, in the spread of Oriental Sore. He found that the insect, having fed on the peripheral blood of a case of the disease, took up the parasite in its pre-flagellate stage, and that development into the flagellated form took place within the body of the bug. With true devotion to scientific research he inoculated himself from a case of Oriental Sore in December, 1910. Ten days following the inoculation nothing was to be seen, but after 16 days a distinct nodule could be felt, and on puncture parasites were readily found. Experiments are now in progress to determine the passage of the parasite from an infected bug to a susceptibie person. An important point in Captain Patton's research is the fact that the parasite flagellates within the body of the bug only at a temperature below 25° C. It is also to be noted that Oriental Sore occurs in India only in places where there is a decided "cold weather," such as Karachi, Quetta, Delhi, Lahore, and Cambay. Apparently it has not been met with anywhere south of Cambay or east of Delhi. The temperature at Cambay from the middle of October to the end of February keeps well below 25° C. during the 24 hours. Captain Patton believes that this restricted geographical distribution is to be explained by the relations of temperature to the digestive processes in the bug.

So far the theory propounded appears to afford an extremely reasonable explanation of the behaviour of the disease. Although Captain Patton has not actually succeeded in transmitting the parasite by the intermediation of the bug, he has brought forward strong evidence in this direction, and has shown that the parasite only flagellates in the blood below a certain temperature, this observation exactly coinciding with the geographical distribution of the disease in India. Further investigations are being undertaken to the results of which we look forward with interest.

[1] THE LANCET, March 16th, p. 743.

Scritti Medici in Omaggio a Augusto Murri. Bologna: Tipografia Gamberini e Parmeggiani. 1912.

IT is the gracious custom in France and Italy for the professors of a university or school to publish a collection of papers on their various subjects, and to dedicate the volume to a colleague whom they desire to honour. The book before us is such a collection, dedicated to Augusto Murri by the Medico-Chirurgical Society of Bologna, in celebration of the thirty-fifth year of his professorship at the University. These *Scritti Medici* form an imposing volume of over 700 pages and embrace a great variety of subjects, the majority of the articles being by the various professors of the Bologna University.

In the first paper Professor Piccinini treats at considerable length on the methods of Bier's hyperæmia. Those who are familiar with Italian medical literature will understand how readily the genius of the beautiful Italian language lends itself to the appreciation and analysis of a scientific method such as this. The thought is Teutonic, while the expression is Latin—an ideal combination of material and form. The author gives an able exposition of the whole subject, fortified by a number of cases under his own care, and a series of experimental investigations on animals to show the interchanges of the gases in the blood after hyperæmic stasis. Dr. Muzio Pazzi contributes an *éloge* on another great teacher of the school of Bologna, De Meis, one of the greatest authorities on the history of medicine, who died in 1901, and whose funeral oration was given by Augusto Murri.

There are also articles on Gastro-enterostomosis, by Professor Giuseppe Ruggi; on Experimental Researches on the Thyroid Gland, by Professor Giusto Coronedi; on the Transfusion of Dilute Solutions of Colloids, by Professor Pugliese; and on Rivalta's New Serum and Blood Reaction in Mental Diseases, b Dr. Tancredi Cortesi. Some of the most interesting papers are those by Professor Egisto Magni on the Radiology of the Urinary Tract, by Professor Giovanni Pini on Radiotherapy, and by Dr. Busi on Medical Radiology. Professor Lussana gives the results of his experimental researches on the action of milk and its components on the isolated heart of the frog and the tortoise. It would appear from these experiments that the milk exercises a toxic action on the heart, depending probably on the excess of chloride of sodium. This is in accordance with the researches of Dr. Beccari, as reported in his paper on the inhibitory action of the salts of potash on the heart. Dr. Facchini gives a careful *résumé* of the treatment of syphilis with salvarsan in the Medical Clinic of Bologna, with special reference to the syphilitic affections of the nervous system.

The whole volume, which is beautifully printed and

illustrated, is not only a magnificent tribute to Augusto Murri, but a fit monument to the Medico-Chirurgical Society of Bologna.

Epidemic Dropsy in Calcutta. By E. D. W. GREIG, M.D., D.Sc. Edin., Major, I.M.S. With Illustrations. Calcutta: Superintendent of Government Printing. 1912. Pp. 79. Price 2*s.* 6*d.*

THIS is No. 59 of the official Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India, and is a continuation of that by Major Greig of the same title numbered 45.

The author gives a complete history of the recent outbreak of epidemic dropsy which occurred at Calcutta, and also a valuable note on an outbreak resembling beri-beri which occurred in the jail at Basti in 1910. There is also an account of an outbreak of "ship beri-beri," and a valuable epitome of the subject of epidemic dropsy and scurvy. Two main factors appear to have determined the outbreak of epidemic dropsy at Calcutta: (1) The high and sustained rise in the price of food grains; and (2) certain defects in dietary. During the period of high food prices in Calcutta the conditions brought about, amongst individuals with small fixed incomes, are, broadly speaking, analogous as regards dietary to those met with on board ships which touch ports only at prolonged intervals. In both the diet becomes "one-sided" and monotonous, and in both cases a morbid condition may result, called in the one case "ship beri-beri" and in the other "epidemic dropsy." The features of these conditions very closely resemble one another and bear a relationship to scurvy. Major Greig is of opinion that the addition of rice bran to the dietary of persons consuming polished rice is likely to prove of value, not only in the prevention, but also in the cure, of this disease, and it has the advantage of being a simple and economical means of dealing with it.

The prevention of epidemic dropsy has a very important relationship to the dieting of large bodies of persons whose staple food is rice. It has also an important bearing on the maintenance of the health of crews of ships undertaking prolonged voyages, particularly those ships carrying rice-eating crews. Consequently the accounts of recent researches on this subject should be brought to the notice of all concerned with a view to preventing outbreaks of this disease. An Indian food grain stated by Major Greig to have valuable prophylactic and curative properties in this disease is the green *mung dal* of India, which, he says, corresponds to the *katjong hidjoe* of the Far East and the *aduki* of Japan. Its technical name is Phaseolus radiatus. Green *mung*, or *mung dal*, is cultivated in India, chiefly at Bijapur, North Canara, Kathiawar, Poona, Satara, and Sirsi. Van Andel, in the treatment of beri-beri patients, forbids rice, tobacco, tea, and coffee for a time, and allows the *katjong hidjoe* (*mung dal* of India) prepared in various ways, along with fresh meat or fish, vegetables, and fruit. Under this regimen we find an apparently hopeless paraplegic and the most advanced cases of beri-beri improve rapidly. The eating of rice surreptitiously must be vigilantly guarded against.

Van Andel, as Major Greig also remarks, warns against malingering in connexion with this disease, and notes that the induction of cardiac irregularities suggesting beri-beri in areas where the disease prevails, by the use of drugs, is a possibility to be borne in mind by medical officers under whose care native soldiers and workmen come. The value of the addition of fresh meat to the dietary should never be lost sight of in the prophylactic and curative treatment of epidemic dropsy. Major Greig notes that the scare as to the connexion between the use of mustard oil and the prevalence of epidemic dropsy at Calcutta is baseless.

Tuberculin Treatment. By CLIVE RIVIÈRE, M.D. Lond., F.R.C.P. Lond.; and EGBERT MORLAND, M.B., B.Sc. Lond., M.D. Berne. London: Henry Frowde and Hodder and Stoughton. 1912. Pp. 277. Price 5*s.* net.

A SUMMARY perusal of the existing literature on tuberculosis shows that there are dozens of tuberculin preparations on the market, each one declared of value by competent observers. They are used in radically different ways, from infinitesimal to very large doses, given frequently or rarely, either subcutaneously, by mouth, or by external application. The theoretical side of the tuberculin treatment presents evidence still more conflicting and contradictory, and this little book has arrived at an opportune time. The careful perusal of its 250 pages brings light and serves as guidance.

By a process of judicious elimination, based on personal experience in different fields of activity, a critical review of the vast literature is arrived at, and the authors offer a concise and broad-minded presentation of the subject. Their standpoint—that there is virtue in every one of the tuberculin preparations, that only familiarity with one is necessary—seems borne out by the best testimony and works toward simplification of our clinical procedures. The authors also find a happy explanation of the good results obtained by the two opposite schools in matters of dosage—Wright's and Koch's. The determination of the opsonic index, however, is considered of no great practical value, general and local conditions amply serving for guidance as to treatment. On the other hand, the greatest importance is laid upon the body temperature; rectal measurement is preferred. The usually recommended two or three hourly measurements are abandoned. Once the individual daily curve is ascertained, two measurements per diem will suffice. Of course, exceptional cases requiring more frequent measurement will occur. This constitutes a simplification of the greatest importance, particularly in "ambulant" treatment, to which frequent measurements offer an almost insurmountable obstacle.

The determination of the initial dose, the increase of doses, the interval between them, and the final dose—subjects of capital importance—are discussed in a most lucid fashion and illustrated by admirable charts, so that rapid information and orientation are possible. Very wisely the authors refrain from giving statistics of results of tuberculin treatment. This deviation from customary practice is amply justified by the uselessness of such statistics without the most painstaking analysis of component factors, which would demand enormous labour and space. Furthermore, as an efficacious therapeutic agent tuberculin does not seem to need statistical recommendation, since practically all competent clinicians make use of it to their satisfaction. A final judgment as to the extent of the usefulness of tuberculin will be obtained only after it is used more by the practitioner, and it is by the help of just such a terse and clear statement, free from enthusiastic exaggeration and illogical argument, that he may be enabled to attempt the experiment. The authors do not unduly insist, as has been done, that tuberculin is an indifferent preparation which cannot do harm; on the contrary, they are explicit in their warnings, stating clearly the contra-indications and possible dangers.

The book is well printed, the subject matter is suitably arranged and indexed and singularly free from typographical as well as other errors, and we can recommend it as one of the best manuals on this burning question (in a new edition we should like to see "tuberculous" substituted for "tubercular").

MISCELLANEOUS VOLUMES.

THE psychological problem of womanhood is dealt with in *Letters to Myself by a Woman of Forty* (London: T. Werner Laurie. Pp. 206. Price 5*s.* net.). The writer describes the thoughts and aspirations of a woman of 40 who is hoping to have a child. She reviews her past life at its varying periods, and writes such letters to herself as she considers might have helped her had she received them when a child, a girl, and a young woman. Much of her advice to herself is quite sound, especially where she treats of upbringing in sexual matters; and in one chapter, that entitled "The Lucky People," she says with regard to bringing up in general: "The old tendency to shape every child by one standard was bad enough, but the modern tendency to leave every child to work out its own salvation without the help of any fixed standard at all is surely worse still." In our opinion, learners, whether they be children in years as well as in knowledge, or only in the latter capacity, need hard and fast rules for guidance. There is plenty of time for exceptions and for branch lines when the main course has been settled. The book is well worth reading, even though it does not pretend to treat the very important matters with which it deals in any profound manner.—— Dr. EDITH B. LOWRY, of Chicago, in a book entitled *Herself, Talks with Women Concerning Themselves* (Chicago: Forbes and Company. 1912. Pp. 221. Price $1 net), quotes in her preface a passage from the *Journal of the American Medical Association* stating that no book of a satisfactory nature exists which describes the female generative organs, anatomically, physiologically, and pathologically, treating also of childbirth, written in language easily understood by the laity, and suitable for a medical man to give to some of his young women patients. Dr. Lowry states that nearly every question in her book, which is put forward as an attempt to supply the above-mentioned need, has been "written in answer to questions asked by women readers of the author's magazine articles." While it is likely that the author sincerely thinks she is rendering a public service by putting into print for general reading the information bluntly given in this book, we are distinctly of opinion that much of it should never be put into print at all, but should be imparted orally only by the proper person, having due regard to the specialised individual requirements of the neophyte. If it be urged that such a course presupposes on the part of every young woman facility of access to an instructor who is capable, willing, and fitted to instruct in the proper manner, a condition that it must be conceded is rarely fulfilled, we reply that in our opinion the evils of injudicious or over-instruction are as great as, if not greater than, those of ignorance. We believe that a proper instruction of youth and womanhood concerning the essential nature of sex factors is a desirable thing; but we do not believe that such instruction can be universally, or even generally, conveyed safely by any blunt printed statement. While some individuals may profit by it, others—and these are probably greatly in the majority—according to their individual temperaments, will be led to pruriency rather than to purity. A really excellent chapter in the book is that on "How shall the child be told?" Unfortunately, the book itself appears to us to be a negation of the admirable principle therein laid down—viz., that of waiting patiently until a desire is expressed for information, then imparting it to such an extent and in such a fashion as the individual case may demand. That is the natural and proper way; and that is just what no book can effect, since it offers the same pabulum in the same way to all alike.—— The foregoing strictures, however, do not apply to two other little books by the same author—viz., *False Modesty, That Protects Vice by Ignorance* (Chicago: Forbes and Company. 1912. Pp. 110. Price 50 cents net), and *Confidences, Talks with a Young Girl Concerning Herself* (Same publishers. Pp. 94. Price 50 cents net). The first of these attempts to show the importance of early and proper instruction in matters relating to sex delicately given by the mother, or someone competent to speak of such things to growing girls. The second is intended to aid mothers in giving the necessary instruction to their daughters.—— Similar natural and sound instruction, to be imparted by a father to his son, is to be found in Dr. LOWRY'S *Truths: Talks with a Boy Concerning Himself* (Chicago: Forbes and Company. 1912. Pp. 95. Price 50 cents net). The last three books we can heartily commend.

Mr. HENRY W. SPAIGHT, Honorary Superintendent of St. John Ambulance Brigade, has published a very practical little pamphlet, entitled *Stretcher Drill and Flag Signalling for Women* (Helston: Lander and Son. Pp. 21. Price 3*d.*), intended as a help to officers and members of Women's Voluntary Aid detachments. On reading instructions that call on the women bearers, with as little compunction as though they were being told merely to sit down, to "climb over the wall," we begin to realise that the much deprecated "tom-boy" of our earlier days is becoming a valuable asset in modern womanhood. It is not really strange, however, when one comes to think of it; for it is but a logical extension of the muscular effort already required of nurses, and hardly more than that daily exercised by thousands of women on the tennis lawn or the golf course.—— A useful little book is *How to Become a Certified Midwife*, by E. L. C. APPEL, M.B., B.S., B.Sc. Lond. (London: The Scientific Press, Limited. Pp. 56. Price 6*d.* net), which now appears in a new edition, revised and brought up to date by VICTORIA E. M. BENNETT, M.B., B.S. Lond., D.P.H. Cantab. The three chapters describe respectively the method of obtaining a midwife's certificate under the Midwives Act, 1902, the rules and regulations of the Central Midwives Board, which comprise the midwife's duties to her patient and to the child, as well as the general regulations, and her relations and duties to the local authorities of the area within which she practises. Appendices contain a list of institutions at which midwives may be trained under the Rules of the Central Midwives Board, the Board's leaflets on ophthalmia neonatorum and cancer of the womb, and an explanation of terms used in the book. In the present edition the latest (1911) edition of the Rules of the Central Midwives Board has been conformed to Dr. Bennett strongly advises intending candidates to secure a combination of institutional training and outside work in a district.

JOURNALS AND MAGAZINES.

The Yellow Fever Bureau Bulletin, No. 12.—This number completes the first volume of the *Bulletin*, which was established rather more than a year ago by the late Sir Rubert Boyce. He was succeeded as editor by Dr. Harald Seidelin, who has directed the publication ever since. It is now proposed to enlarge its scope, and in future the *Bulletin* will summarise also the literature respecting two other diseases, dengue and Papataci fever, on the same lines as has hitherto been done for yellow fever. It will now be issued as a quarterly publication. The present issue contains a number of short but interesting articles and reviews of current literature in connexion with yellow fever. A short account is given of the present outbreak of yellow fever in Ecuador, and this is of some interest from an epidemiological point of view. Owing to internal disturbances at Guayaquil, the capital of the state, a large body of non-immune troops from the interior was, on Jan. 22nd of this

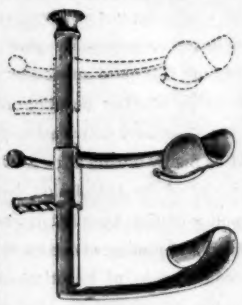
year, drafted into the city where yellow fever had already been appearing. The troops, however, only remained there a few days, and while on their return journey about 200 of them were attacked by yellow fever, to which they mostly succumbed. In Guayaquil itself during the next four weeks 98 other cases were notified, of whom 43 died. Other cases were also reported in certain small towns, along the railway route followed by the troops, in one instance at an elevation of 4000 feet above sea level. In a tabular form the distribution of yellow fever throughout the world in 1911 is shown; and in another table similar information is furnished for the first four months of 1912. A short article gives a notice of a paper by Dr. A. Agramonte published in the *New York Medical Record*, entitled "Notes upon a So-called Parasite of Yellow Fever," in which the author seeks to prove that the "bodies" discovered by Dr. Seidelin in the blood of yellow fever patients are not parasites at all. To these arguments Dr. Seidelin replies very shortly in a series of footnotes, at the same time deprecating what he regards as the very personal spirit in which Dr. Agramonte's article has evidently been written.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. XLIV., No. 4. June 12th, 1912. London: C. F. Clay, Cambridge University Press. Pp. 243–358 + xi.–xxv. Price 7*s.*—Working in the Cambridge Laboratory under Professor Langley and Dr. Barcroft, F. Verzár has studied "The Gaseous Metabolism of Striated Muscle in Warm-blooded Animals," Part I. The most satisfactory way of determining the respiratory processes of muscle is to estimate the gases in the blood running to and emerging from it. By special method the gastrocnemius of the cat was prepared under practically normal conditions. The oxygen absorption of the blood was measured by Barcroft's differential apparatus; first the absolute value of the oxygen used in rest, the blood flow being specially studied during muscular activity, and also the CO_2 production under different conditions. The oxygen used per gramme and minute of a resting muscle is 0·00448 c.c. The muscle uses not only during, but also for a long time after, the contraction, more oxygen than before. It is concluded that this means that the oxygen is probably used for a recovery process. CO_2 and other acids (probably lactic acid) are produced in great quantities after a tetanus. These acids turn out oxygen from the blood so that the muscle can use it more easily. The quantity of blood in muscles is about 2·5 per cent. The rate of blood flow is decreased during muscular activity, and increased after it—a fact noted by other observers. It becomes quicker after cutting the sciatic nerve. From the same laboratory is the paper on "The Relation of Blood Flow to Metabolism in the Submaxillary Gland" by Joseph Barcroft and Franz Müller. The experiments were made on anæsthetised cats. When the nerves were cut the rate of blood flow varied in 15 experiments between 0·25 and 0·45 c.c. per gramme per minute. The oxygen intake varies between 0·017 and 0·027 c.c. per gramme per minute. Yohimbin causes no secretion of saliva, even when injected into the arterial system, but there is a dilatation of arterioles which admits of about a tenfold increase in blood flow. This increase does not, however, cause any measurable change in the oxygen used by the gland. After such treatment stimulation of the chorda tympani causes a good secretion of saliva, accompanied by about a sevenfold increase in the oxygen taken up. S. B. Schryver describes a method for "The Preparation of the Unconjugated Acids of Ox-bile," for which the reader must consult the original. The inquiry into "The Causes of Absorption of Oxygen by the Lungs," by C. G. Douglas and J. S. Haldane, was begun in 1909 to determine whether and to what extent the absorption of oxygen by the lungs is a process of simple diffusion, or an active process analogous to glandular secretion or absorption by the intestine—a question that dates back to 1871, and one associated with the names of Wolffberg, Strassburg, Nussbaum, Fredericq, Haldane and Lorrain Smith, and latest of all by Krogh. Leaving aside the details of the improved methods for using carbon monoxide to determine the arterial oxygen pressure in man and animals, the authors conclude that under resting conditions in normal air containing an excess of oxygen the arterial and alveolar oxygen pressures are equal, and the passage of oxygen from the alveolar air into the blood is due entirely, or almost entirely, to diffusion. A rise of arterial above alveolar oxygen pressure is brought about by (1) a diminished oxygen percentage in the air breathed; (2) carbon monoxide poisoning; and (3) muscular work. The common factor in these conditions is lack of oxygen in the tissues or part of them. The rise of arterial oxygen pressure is due to active secretion of oxygen inwards; and this active secretion is probably localised in the alveolar epithelium and excited by products of metabolism brought to the lungs by the blood from tissues that are short of oxygen. The arterial oxygen pressures given by the aerotonometer are too low, and in some circumstances the same is true of the carbon monoxide method; but, generally speaking, the latter method, if proper precautions are taken, gives practically correct results. The "Question of an Internal Secretion from the Human Ovary" is discussed by James Oliver, who gives the results of his experience, chiefly clinical, during the last 25 years.

New Inventions.

AN IMPROVED MOUTH GAG.

THIS gag is a modification of a continental pattern. It is especially useful in cases about the mouth or throat where it is necessary to keep up the administration of the anæsthetic. It is advisable to open the mouth with an ordinary gag to the extent required and then place this one in position. It takes up little room and is not in the way of the operator, fitting closely to the cheek, and by the tube attachment can be made to a Junker apparatus.



The instrument has been made for me by Messrs. Allen and Hanburys, Limited, of Wigmore-street, W. It is represented at half scale.

HUGH R. PHILLIPS, M.D. Edin.,
Senior Anæsthetist Italian Hospital; Anæsthetist West-End Hospital for Nervous Diseases.
Dawson-place, W.

MEDICAL MISSIONS INSTITUTE.—The German Colonial Society has given 3000 marks to the Tübingen Institute for Medical Missions.

RADIUM TREATMENT IN VIENNA.—A "radium station" has been established in one of the rooms of the Vienna General Hospital. Salts and other substances containing radium or emitting radium emanation for internal or external use—for inhalations and baths—of all kinds and of varying strengths, can thus be supplied for the use of the hospital physicians and surgeons. Arrangements are also made whereby practitioners can obtain the loan of "radium containers" for a few hours. The director of the radium station is Professor Riehl.

THE LANCET.

LONDON: SATURDAY, JULY 27, 1912.

The National Insurance Act: The Action of the British Medical Association.

THE Representative Body of the British Medical Association has now met for the fifth time since the National Insurance scheme was first brought forward, and for the second time since the measure became an Act; and the meeting which has just taken place at Liverpool at the commencement of the annual gathering of the British Medical Association is among the most important. At each session the elected Representatives had grave issues before them, and their decisions, given in the name of the Association, and amounting to declarations of policy, meant much to the whole medical profession; and far-reaching as their action has been on more than one recent occasion, there is no doubt that the wish and temper of the Association has been reflected on the whole faithfully. Many of the Representatives have been sent as delegates to vote as instructed by their divisions, others have had a wider discretion in voting, but their verdict as a body must be received as the verdict of the Association. At their meeting at Liverpool the Representatives had a very heavy responsibility placed upon them. In circumstances which it is quite unnecessary to recapitulate, it lay with them to say whether negotiations between the Association and the Insurance Commissioners should be continued or should be finally broken off. Their view might require the endorsement of the Association, but it was known that the future policy of the Association was mainly in their hands. After keen and prolonged debate the resolution for the provisional continuance of negotiations was rejected in favour of a policy which was worded as follows in a triple resolution:—

(1) That the Government be informed that the Association adheres to its *minimum* demands as formulated in the letter of Feb. 29th, 1912, and since elaborated in interviews with the Chancellor of the Exchequer; (2) that the Association calls upon all members of the Association who are members of Advisory Committees in connexion with the National Insurance Act, and also on other medical members of those committees who are in sympathy with the policy of the Association to withdraw from these bodies; (3) that the Association calls on all practitioners to refrain from applying for or accepting any post or office of any kind in connexion with the National Insurance Act, except in regard to sanatorium benefit, provided it is carried out in accordance with the wishes of the Association, until such time as the Government has satisfied the Association that its demands will be met.

All medical practitioners who have accepted office on any provisional Insurance Committees are also called upon to resign, the resolutions not applying to Ireland. The first two headings of the triple resolution were agreed to by an overwhelming majority, but the third, which included an agreement to work the sanatorium benefits of the Act, was only accepted after repeated discussions. Thus the Association, following the course indicated by recent events, has decided to break off negotiations with the Commissioners and the Government. The risks of so doing had been pointed out by the Council of the Association to the constituency in a report, and it had been officially stated by the Joint Board of Commissioners that the Government would regard such a decision as final and would act accordingly. Thus action has been taken with a full knowledge of its seriousness; and taken, we verily believe, in response to a deep feeling that all the long negotiations of the past twelve months have secured for the medical profession no substantial improvement in the terms originally offered by the Chancellor, and universally reprobated.

Now that the British Medical Association has washed its hands of the National Insurance Act the Commissioners, so we learn from Mr. MASTERMAN'S communication to the press on the eve of the Representative Meeting, will proceed, in accordance with the terms of the Act and as though nothing had happened, to make and issue regulations for medical benefit, using such medical assistance as may still be available to them. We shall have local schemes drawn up, and medical practitioners will be invited to join the panels in each insurance area. If the regulations for the administration of medical benefit cannot be made to work they will be returned to their pigeon-holes, and that part of Section 15, Subsection 2, which permits the Commissioners, or the local Insurance Committees with their approval, to make other arrangements or to suspend medical benefit, will be brought into force. No Government, Mr. MASTERMAN declares, will ever consent to raise the additional money required to meet the minimum demands of the British Medical Association; and although the Chancellor of the Exchequer has stated several times that more money might be found than was originally contemplated, if the necessity for finding it were established, it is clear that the Government consider that at the present time, when negotiations are being broken off, the case for the British Medical Association has not sufficiently been made out. The position, therefore, is that the British Medical Association, backed by many other members of the medical profession, continues in adherence to demands which the Government say cannot be conceded; and it has voluntarily placed itself outside the Act. The Government, taking the refusal to negotiate any further as final, proposes at the worst—and it is as well to look the worst in the face—to suspend medical benefit and pay over an equivalent sum to Insurance Committees or to the insured persons themselves, who will then be left to deal with the medical profession, individually or through clubs and organisations of different sorts. We regard this position with considerable apprehension, but the medical profession can meet the trouble. The interests of the medical profession and of the community are one, and everything must be done to show the public that this is the true

professional ideal, and that we, as members of the medical profession, mean to act up to it. The point of view must be steadily maintained that an effective medical service would not have been forthcoming under the Chancellor's scheme.

The first step, in view of the possible suspension of medical benefit under the Act, is, of course, the organisation, as far as possible, of a capable public medical service, which will be acceptable to medical men and beneficial to the public, so that the public may not feel that they have been left in the lurch by us as a profession. In fact, the medical profession must help the Chancellor to keep the promises which he has made without counting their cost. Seventeen years ago we decided to have an inquiry made into the position of the medical profession in regard to the clubs and societies providing medical aid for the sick poor, and the results of this investigation appeared at intervals in THE LANCET during 1895 and 1896. In republishing our Commissioner's reports under the title of "The Battle of the Clubs" we stated our belief that, if in a whole neighbourhood the profession stood out against the club system, having first clearly ascertained that abuses were rife under it, the sense of the community would be with the medical men. Much has happened since this pioneer work was done, and the necessity for freedom from Friendly Society control has not only become a commonplace among medical men but has been accepted as one of the foremost demands of the profession. The question now is whether what we said of any given neighbourhood in 1896 can be said with safety of the whole country and the whole club system in 1912. The possible necessity of putting the matter to test has, we know, been realised for some time past by the executive of the British Medical Association, and two tentative schemes, one based on the contract system, and the other on the principle of payment for work done, have already been drawn up and submitted for the consideration of the members. One or other of these schemes, or some combination of them, with modifications to meet local needs, will have to be put quickly into action to meet the present situation, and to this end a fund, consisting of contributions of not less than £20, is to be raised.

The British Medical Association: the Address in Medicine.

ONE of the most interesting and fruitful of the fields of research in medicine within recent times is that concerned with the study of the chemical inter-relationships between the various tissues and organs of the body. The theory of internal secretions, at first confined to the so-called ductless glands, has proved to have far wider applications as our knowledge has increased, and the discovery by STARLING and BAYLISS of secretin and prosecretin has led to the recognition of a whole group of hormones or chemical excitants and to a widening of our views upon the methods by which the various actions and reactions occurring in the body, and constituting the vital mechanism, are coördinated and adjusted. It is obvious that these chemical excitants or activators must for the most part act through the circulatory system, and be carried from place to place by the blood or lymph stream. Dr. G. A. GIBSON, in selecting the subject of the Relations of the Circulation for his Address in Medicine at Liverpool before the Eightieth Annual Meeting of the British Medical Association, and in devoting special attention to the chemical factors concerned in circulatory adjustments, was singularly fortunate and opportune. He gave a luminous, suggestive, and eclectic summary of recent work upon these questions, the more valuable in that it afforded in concise and digested form a great deal of information that is still for the most part only to be found in special monographs, and is therefore inaccessible to the majority of practitioners. He was careful to insist that the observations and results to which he directed attention were of more than academic interest, in spite of their complex, involved, and abstruse character. He discussed with special emphasis the practical aspects and therapeutic applications of this work, and at the same time showed the difficulties in the way of so doing. There would be few to disagree with Dr. GIBSON'S dicta that the art of therapeutics will remain for long one of the most difficult branches of scientific investigation, and that many of our views depend upon apparent analogies and indirect arguments. At the same time, he sounded a note of hopefulness and encouragement as to the future, maintaining that the advances now being made promise valuable additions to our knowledge in the near future and infinite further possibilities.

In his opening remarks Dr. GIBSON points out that the circulation in all the higher animals may be regarded as based upon four primary groups of principles—viz., its mechanical arrangements, the chemical changes by which it is maintained, its modification by glandular secretions, and its adjustment by nervous agencies. While reviewing recent work upon all of these it is to the effect of glandular and other tissues upon the circulatory mechanism that he devotes the greater part of his address. He first instances the closeness of the connexion between glandular and circulatory changes by reviewing the symptoms and pathological anatomy of exophthalmic goitre, myxœdema, acromegaly, and Addison's disease, and then summarises some of the chief facts in regard to our knowledge of internal secretions and hormones. The well-known properties of thyroid extract and of adrenalin are briefly discussed, but the functions of the pituitary body and the actions of extracts from its different parts are considered at some considerable length. It is now generally recognised that the function of the anterior lobe is related to the growth of the skeletal tissues, including bone, cartilage, and connective tissue in general. The intermediate portion, consisting of a less vascular epithelium, secretes "colloid," which appears to contain hormones acting upon the heart, blood-vessels, and kidneys. It is probable that several such hormones exist, some of which act antagonistically, the most active and important being those which produce contraction of the blood-vessels in general with dilatation of the renal vessels and increased activity of the renal cells. Recent work directed to determining

whether there is any vicarious relationship between the thyroid and pituitary bodies fails to lend support to that suggestion, since no iodine has been found in the latter, even so long as five or six months after removal of the thyroid. Dr. GIBSON refers also to some interesting observations of ASCOLI and LEGNANI, who removed the pituitary gland from young puppies. In many cases death occurred within two or three days, but in those that survived no further growth took place, ossification, dentition, and reproductive development were arrested, and changes were found in the spleen, thymus, thyroid, and suprarenals. Perhaps the most striking proof of the importance of chemical agencies in the maintenance of cardio-vascular tone is afforded by a study of the changes in the suprarenal bodies produced by disease or experiment, and the facts are brought out by Dr. GIBSON in a clear and suggestive fashion. He first alluded to the observations made by various workers upon the effects of diphtheria toxins upon the suprarenal glands—notably the hyperæmia of the structure and the diminution of the pressor substance, so that the medulla of the gland may become completely exhausted of adrenalin. This is shown by the absence of "chromaffine" substance—e.g., a substance having an affinity for bichromate salts—which is the histological test for the presence of adrenalin. It has further been shown that many of the sudden deaths occurring in diphtheria and other acute infections are associated with marked changes in the suprarenal glands. In this connexion it is of great interest to find that life is not incompatible with destruction of a large part of the nervous mechanism of the circulation, such as removal of the cervical, stellate, superior and inferior mesenteric ganglia, whereas removal of the suprarenal glands proves fatal in 48 hours. This striking demonstration of the importance of the chemical hormones upon cardio-vascular tone is summarised by Dr. GIBSON as follows: "Removal of the nervous factor is not fatal, removal of the chemical is."

In the later parts of his address Dr. GIBSON gives instances of the application of some of these principles to the treatment of morbid conditions. After referring to the well-established value of thyroid extract in myxœdema and cretinism, he points out that it may also afford invaluable service in several conditions which are very likely to be overlooked, such as the minor degrees of thyroid inadequacy occurring at the climacteric period or shortly afterwards. He also instances its usefulness in conditions of lack of growth in the youth of both sexes. He believes that thyroid extract influences blood distribution and nutritive possibilities in the most powerful manner. In regard to suprarenal extract or adrenalin, Dr. GIBSON alluded to its use by Dr. J. D. ROLLESTON to prevent heart failure in diphtheria, and also to its employment in conditions where pyrexia has led to diminished function of the suprarenal bodies. He has also found this substance of great value in the treatment of exophthalmic goitre, and indeed states that it has no rival in the management of this affection. He has found that under its influence the pulse-rate is reduced, the protrusion of the eyeballs disappears, the thyroid gland gets smaller, and the tremor, together with the other nervous symptoms, vanishes. He therefore inveighs strongly against the present tendency to submit patients with exophthalmic goitre to surgical operation. He also advises the use of pituitary extract in the treatment of certain conditions where the arterial blood pressure tends to fall, as in pneumonia and other acute diseases. We have only attempted to refer to a few of the interesting points discussed by Dr. GIBSON in his suggestive address, but we commend its perusal to all our readers. Those who are interested in some of the particular advances in the physiology, pathology, and therapeutics of the circulatory system will find his words useful in giving them a sense of proportion; and those less familiar with his themes will benefit by a valuable introduction to them.

The British Medical Association: the Address in Surgery.

A GENERAL survey of the whole field of surgery has constituted in many cases the address in surgery delivered before the British Medical Association, but Mr. F. T. PAUL chose the better part of basing his oration on his own personal experience in one branch of surgery to which he has devoted a large share of his attention. He told, NOT what is thought and done by others, but what he himself has thought and done. He gave the results of many years' work, rather than echoed the thoughts of others, when describing the surgery of the large bowel, and all who heard him speaking from a ripe experience of his subject found themselves really learning while they listened. This is more rare than it should be on similar occasions.

Mr. PAUL confined his remarks to the consideration of a few points, and one of these was the treatment of cancer of the colon. First he stated his firm belief that in some cases of cancer of the colon spontaneous cure may occur. In this opinion many surgeons will concur, though necessarily a doubt may often arise that the initial diagnosis was not correct; too many circumstances are now recorded to allow the sceptic always to have his way. It is certain that growths yielding all the clinical signs of malignant disease of the large intestine have in certain cases disappeared, especially when the performance of a colotomy has removed the irritation of the passage of the fæces. Moreover, there are many cases in which an undoubtedly malignant growth, as shown by microscopic examination, has been removed with a very insufficient margin of safety, and yet no recurrence has occurred. Mr. PAUL last year had five cases under observation in which during the previous seven years he had performed a laparotomy and had found that inoperable cancer had been present, and yet last year apparently all were free from disease. Another point on which Mr. PAUL laid great stress was the dependence of the prognosis of cancer of the large bowel on the variety of carcinoma present. He distinguished three forms: the soft fungating form, the small hard variety, and the infiltrating "colloid" type. Of these, the colloid variety is the most malignant, then comes the hard "scirrhous" form, and, lastly, the least malignant of all, the soft fungating form, and fortunately this is the most frequently seen. The fungating form appears most commonly in the cæcum and rectum, and the hard cancer in

the sigmoid flexure, while colloid carcinoma selects the rectum. Mr. PAUL has found that a particular form of epithelioma occurs in the rectum about two inches above the anus; all the cases, some five or six in number, occurred in women, and the growth is quite distinct from the ordinary form of epithelioma of the anus. This is an observation of no little interest, and it has not been recorded previously. Indeed, the importance of such practical notes on the pathology of cancer of the large intestine cannot be too fully recognised; they should exert a great influence on surgical practice. For example, accepting Mr. PAUL'S teaching, if the growth be of the soft fungating variety the surgeon will know that he may remove the growth without necessarily interfering with the bowel much beyond the obviously affected area, while if the extent of the disease should forbid excision he will know that by a short-circuit a long period of relief will in all probability follow. If the growth should infiltrate the tissues and form a hard-edged ulcer without fungation, a wider excision would be required, and even then the chance of recurrence would be much greater, points in prognosis that might be of the greatest service to the operator and the medical advisers generally. Mr. PAUL showed that in many cases of malignant disease of the colon the enlargement of the neighbouring lymphatic glands is due merely to microbic infection from the foul ulcer and not to secondary growth, and in one case at a second operation a year later he found that some glands which had been left when the malignant growth was removed had entirely disappeared. Other surgeons must have had a similar experience frequently, and the explanation is an obvious one; nevertheless, we do not find it in the text-books.

The question of the best mode of performing colotomy is one of great importance, and the opinions expressed here by Mr. PAUL are of interest. He holds that in all cases of obstruction of the large bowel, whether diagnosed by operation or otherwise, in which strangulation is absent, treatment by colotomy is far preferable to any form of internal operation. The form of colotomy which he prefers is the right lumbar operation when the colotomy is merely temporary, and when the patient is old and exhausted he considers that this is less dangerous than an anterior operation. When, however, the colotomy is intended to be permanent he maintains that the left iliac operation should be selected, provided that the site of obstruction permits. We refer our readers to his arguments, which are set out in a clear and exact manner—indeed, the whole of the address is of a high standard, and the reader will recognise that the words are those of one who knows that whereof he speaks, being reinforced by a wide experience.

An International Memorial to Lister.

EVER since the great LISTER died it has been felt that some international memorial to him and to his work must be instituted, and the achievement of that object is now only a matter of time. We are glad that some small delay has occurred between his death and the inauguration of any scheme to keep alive in the hearts of men the gratitude which all owe to his transcendent genius and extraordinary bent for practical work, for the fact that such delay can make no difference in our sentiments towards LISTER marks him out in a singular and appropriate manner. In the case of the usual distinguished man, where it is felt fitting by the nation that bare him, or by the institutions that he served, to record in some permanent manner his achievements, it is well to ask for any desired coöperation of the public at the earliest possible date after his death. The public memory is a short one, and unless the immediate sentiment created by the passing of the great man is given its full value the exhibition of public gratitude is likely to be small. In the case of LISTER the circumstances are totally different. The vast scope of his work and the immeasurable results of its developments are better appreciated now than they were at his death. Not a week but adds to his glory, for no large pronouncement on medical themes has been made since he died without an unqualified recognition that the progress which was being reported might have been indefinitely postponed had it not been for the Listerian discoveries and teaching. And now that the scheme is definitely on foot to perpetuate his memory in some tangible manner, it is right that the intentions of those who have this movement in charge should be international in character—a character which is sufficiently revealed by the names of those who are serving upon the general committee of the Lister memorial.

The origin of the movement is well known. The President of the Royal Society, over which body LISTER himself formerly presided, and the President of the Royal College of Surgeons of England, in the character of the official head of surgery in this country, some weeks back took the necessary steps to collect a large and influential committee for the purpose of establishing the memorial, with the result that they obtained upon that committee representatives of the principal learned bodies and leading universities in the kingdom, of all the great medical corporations and of the great London medical schools, the Prime Minister, the Archbishop of Canterbury, the Viceroy of India, the Lord Chancellor, the Lord Chief Justice of England, the Astronomer-Royal, the Governor of the Bank of England, and 15 of the Ambassadors and Ministers Plenipotentiary accredited to this country. With such a start failure may be said to be impossible, but we may be allowed to hope that the ambitions of the committee are so large that nothing short of a grand success, a success in keeping with the fame of LISTER, will satisfy them. The committee will receive wide support of an international character, and not only from the scientific public, but from many institutions and individuals by whom the debt is realised which is owing to the champion who slew the dragon of sepsis. A preliminary meeting of the committee was held at the Royal Society this week, when, as will be seen from a brief account in another column, a strong executive committee was appointed, who will recommend to a future meeting of the general committee a scheme for the memorial, and will organise an appeal for subscriptions. It is well that this committee should have been carefully chosen and should include as it does such a large proportion not only of well-known men but of men who are versed in affairs, for the form which the

memorial should take is not a subject that can be lightly decided upon.

It goes without saying that there will be a monument to LISTER in Westminster Abbey, but this will only form a part of the memorial, which will be large in scope and international in character. The further provisions for honouring his name and labours are almost certain to fall under one of three headings—firstly, the institution of a great LISTER prize in surgery, international in character and scope; secondly, the foundation of Fellowships in research to be held at recognised scientific centres at home or abroad; and thirdly, a statue of the man himself, or some sculptural monument to him. Of these schemes it may be said that to some extent they are not mutually excluding, as the raising of a monument to LISTER in marble would not prevent the utilising either, or indeed both, of the other ideas to complete a comprehensive plan. When the executive committee meets no doubt other reasonable and practical suggestions will be brought forward, and it would be impertinent as well as premature of us, when so competent a body of persons has been selected to that end, to suggest, save in the vaguest terms, what should be the best way of honouring LISTER in an international manner; but we may point out the fact, lest it should escape general notice, that there is already an Institute of Preventive Medicine bearing his name and well endowed with money. This seems to us to make it probable that most proposals will fall to a certain extent under the first two headings mentioned above. To either of these a statue could be added. Why, indeed, should not the three things be combined? Feeling absolutely sure, as we do, that the international appeal will result in a grand response, it seems to us that no one of the three obvious schemes will exactly coincide with the wishes of the contributors. No one is by itself sufficient, but a fusion of the three might be so regarded. We think it absolutely right that a statue should be erected to LISTER in the capital of the country where he did his life work. There should be a shrine in honour of our most miraculous man of medicine, for the emotions kindled by visits to such tangible memorials are sound, valuable, and beautiful—they play their part in progress. But the international character of LISTER'S work would be best recognised in endowments of medical research of a sort that would invite the competition of all nations and would practically benefit all nations by their methods of distribution.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The results of the Senior Scholarship and Prize Examinations in connexion with King's College Hospital Medical School held this month are as follows: Senior Scholarship, J. R. Waddy; Tanner prize, H. A. Richards; Todd prize, A. S. Wakeley; Special Clinical Surgery prize (given by Professor Sir W. Watson Cheyne), S. Smith (prize); F. M. Lipscomb and N. P. Pritchard (first-class certificates). Prize in Medicine, S. Smith; prize in Surgery, S. Smith; prize in Forensic Medicine, V. W. Draper. Certificates: Pathology, S. Smith; Psychological Medicine, N. H. M. Burke.

Annotations.

"Ne quid nimis."

AMERICAN MEDICAL BIOGRAPHY.

Dr. Howard Kelly is an indefatigable worker, and like a few other busy men in the medical profession finds that he has time occasionally to wander into by-paths of medicine which stray a little from the highway of obvious practical utility. When, therefore, he announced some three or four years ago that he was compiling a biographical cyclopædia of deceased American medical men, those interested in the biographical and historical aspects of medicine awaited the outcome expectantly. The result lies before us in two large volumes,[1] which will be of service to the medical historian and should prove of special interest to the American medical profession, for certainly they constitute the performance of a pious duty in gathering upwards of 1200 medical worthies into what Dr. Kelly appropriately terms "this modest hall of fame." Dr. Kelly has organised his work well, dividing the work among three classes of fellow-workers, taking charge respectively of sections of the country, of various specialties, and of individual biographies. Most of the 235 writers' names are well known to those familiar with American medicine and medical literature, and not a few of them are names of international repute. The introduction consists of a series of interesting articles on the histories respectively of Anatomy (Dr. C. R. Bardeen), Surgery (Dr. Martin B. Tinker), Noted Surgeons of the United States Army and Navy (Dr. A. Allemann), Gynæcology (Dr. H. A. Kelly), Obstetrics (Dr. H. A. Kelly), Dermatology (Dr. James McFarlane Winfield), Ophthalmology (Dr. Harry Friedenwald), Laryngology (unsigned), Women in Medicine in America (Dr. Alfreda B. Withington), and Medical Jurisprudence (Dr. Thomas Hall Shastid), as they have developed in the United States. As regards anatomy and surgery the varying influence of different European schools on their development in America is well traced. Dr. Kelly's history of gynæcology and obstetrics in America is, as might be expected, exhaustive and philosophical. The growth of the medical woman movement in America, in its little more than half a century of existence, is summarised in the last sentence of Dr. Withington's article: "Elizabeth Blackwell, the first woman to take a degree in Medicine [in America], has just died. She lived to see 7399 women physicians and surgeons in America at the present time following in the trail she blazed." Of all the departments of medicine that in which America has made the least adequate progress, in comparison with the rest of the world, is medical jurisprudence. This fact Dr. Hall Shastid traces to the pernicious methods of the law, in that "the lawyer for one side searches till he finds a doctor who holds the opinion that is wanted. The lawyer for the other side searches till he finds a doctor who holds precisely the opposite opinion. Now these two lawyers bring these two doctors into court and introduce them as entertaining views which truly represent the concensus (*sic*) of thought of the medical profession of the day. The whole proceeding is farcical. The opinions are diametrically opposed; besides, the whole world knows exactly how the 'experts' were employed. Nobody believes a thing that is said; nobody is fooled. Some fees are paid, a very great deal of time is taken up, and that is the whole of the matter.

[1] A Cyclopedia of American Medical Biography. Comprising the Lives of Eminent Deceased Physicians and Surgeons from 1610 to 1910. By Howard A. Kelly, M.D. Two volumes of 989 pages, illustrated with portraits. London and Philadelphia: W. B. Saunders Company. 1912. Cloth, 42s. net.

Sometimes the reputation of the doctors is severely injured." The natural result of this system, Dr. Shastid points out, is that doctors do not want to be experts; consequently there is no demand for the literature of medical jurisprudence, or for the teaching of the subject in the schools—research is checked and discouraged. Regrettably America is not the only country in which this system exercises its demoralising effect. Still the medical profession cannot in the premises escape all blame. Diametrically opposing views cannot both be wholly right. If, therefore, such views are held in the profession, those who hold them while expressing them should frankly make it clear to their hearers that, however strong may be their own convictions, the point is one on which there does exist, rightly or wrongly, a difference of professional opinion, and should not attempt to foist their own choice on the public as the consensus of thought of the medical profession. Of the biographical notices themselves but little need be added, save that they are for the most part clear but condensed, that so far as we have been able to find by frequent reference, few if any important medical personages in the United States or Canada have been omitted. Perhaps a place, however, might fitly have been given to Dr. Acland Oronhyatckha, the full-blooded Mohawk Indian chief who studied at the instance of the late King Edward, then Prince of Wales, at Oxford, under the tutelage of the late Sir Henry Acland, completing his medical education at the University of Toronto and practising for a time in that city. He died in March, 1907. His career was certainly remarkable, and though fraternal organisations absorbed most of his time in later years, he might surely have been admitted under Dr. Kelly's qualification of those who "attained great local prominence and widely influenced their fellows by a strong personality."

CAN KALA-AZAR BE SPREAD BY MOSQUITOES?

IN a note on "Leishmania and Mosquitoes" published in THE LANCET of Nov. 4th, 1911, p. 1268, Professor G. Franchini gave a summary of the results of experiments carried out by him in the laboratories attached to the Ospedale Maggiore, Bologna, and in which he sought to prove that leishmania donovani could live and multiply in the intestinal tract of anopheles. More recently, in the last issued number of the *Annals of Tropical Medicine and Parasitology* (Series T. M., vol. vi., No. 1 B.), Professor Franchini has given further details of some of his experiments, and has set out the conclusions at which he has so far arrived. He states that after numerous experiments with fleas, lice, and bugs which had been fed on cultures of leishmania no parasites that could be identified with the "Leishman bodies" were found in the gut of these insects. He therefore decided to continue his investigations with mosquitoes, more especially with anopheles maculipennis, which species is very numerous in certain regions along the Mediterranean littoral, where kala-azar is met with. As a result he found the "Leishman bodies" in great numbers and in various stages of development in the digestive tract of that mosquito. He also found that the staining of the different parts of the parasites, the nucleus, the protoplasm, and the blepharoplast, was so evident that he thinks it must be admitted that the parasites were alive and capable of reproduction. In some of the parasites true nuclear karyokinesis was observed. Experiments were also carried out with other mosquitoes and it was shown that leishmania can live in the alimentary canal of some culicidæ, including the stegomyia fasciata, although not so frequently or so abundantly as in A. maculipennis. It therefore appears probable to Professor Franchini that, in Italy at least, the Leishman parasites are transmitted by anopheles. In this connexion he states that kala-azar and malaria co-exist in some localities in Southern Italy, and that possibly the same species of mosquito is responsible for transmitting both infections. He frankly admits, however, that further experiments on animals are absolutely necessary before it can be determined whether or not leishmania can be transmitted naturally by mosquito to animals which are recognised as susceptible to the kala-azar parasite, such as dogs and monkeys. At the conclusion of his paper Professor Franchini refers to the researches of Dr. C. M. Wenyon, protozoologist to the London School of Tropical Medicine, who has quite recently been making a study locally of "the oriental sore of Bagdad," and who found that leishmania tropica could live and develop in the intestine of stegomyia fasciata; from the non-flagellate form of oriental sore parasite he obtained the flagellate variety in the gut of the insect. We draw our readers' attention in this connexion to a letter which Dr. Wenyon wrote to THE LANCET of Nov. 11th, 1911, p. 1362, adverting to the note already referred to, in which Professor Franchini had discussed the question of the development of leishmania in mosquitoes. Dr. Wenyon, in his letter, suggested the probability that the parasites of the group leishmania can develop to a certain extent in the gut of various insects provided that they find there a suitable pabulum rich in blood. The development of L. tropica in S. fasciata and of L. donovani in A. maculipennis may be of this nature—that is, accidental—owing to the rich nutrient fluid taken up with the parasite by the blood-sucking insects. So far it cannot be said to be proved by any means that the insects in which leishmania has developed are able to transmit the infection to healthy animals, and it remains yet to be seen whether any species of anopheles or culicidæ is to be regarded as a natural agent in the transmission of kala-azar. Already evidence has been brought forward to incriminate the bed-bug, the dog-flea, and the house-fly, showing that they are able in certain circumstances to transmit the infection of leishmania in one or another of its forms. It would, in our opinion, be premature at the present moment to formulate any definite opinion on the subject of whether or not the mosquito is to be regarded as a natural transmitter of kala-azar, but it is obvious that further experiments on animals are required. Meanwhile, until these have been carefully carried out judgment upon the mosquito, and particularly upon A. maculipennis, in relation to the spread of kala-azar must be reserved.

THE SPREAD OF MEASLES.

IN his eleventh annual report Mr. D. L. Thomas, medical officer of health of the borough of Stepney, calls attention to the prevalence of measles, not only in Stepney, but in other parts of the country. He suggests compulsory notification of measles and a closer coöperation with the medical officers of schools, removal of early cases to fever hospitals, and the extension of the system of health visitors to infected households. The school question is undoubtedly a most important factor in the spread of measles, and an object-lesson in this respect took place on July 16th at the North London police court before Mr. Hedderwick, when a woman living in Highgate New Town district was summoned on behalf of the Education Committee of the London County Council by Mr. J. J. Brown for keeping her children away from school. In the evidence it came out that the children had had measles, and that one of the younger ones was still suffering from that disease, in spite of which fact the Council's officers insisted on the attendance of the elder children at school, notwithstanding that one child in the house was still ill with the disease. The defendant stated that every house in her street was infected, but still the officers made the children go to school. The magistrate expressed his

disapproval of the practice of the education authorities and, telling the woman she had done quite right and that she was not to send any of her children to school until all were well, dismissed the summons. If, as Mr. Brown asserted, it is the usual practice to insist on the elder children returning to school even if others in the house are still ill, we must assume that the officers in such a case act officiously and without the knowledge or sanction of their superiors; for it is incredible that any body of intelligent authorities should countenance a proceeding so fraught with danger to the entire community.

THE INFLUENCE OF BENZOL ON LEUKÆMIA.

AN interesting note upon the treatment of leukæmia is published in the *Berliner Klinische Wochenschrift* of July 15th by Professor A. von Korányi. He states that in Professor Barker's wards at Baltimore three girls were under observation who had to work with benzol in a factory. They suffered from purpura hæmorrhagica and very severe aplastic anæmia and two of the cases ended fatally. Impressed by these observations Selling[1] investigated the effects of benzol upon blood formation in the rabbit. He found that after a transitory increase in the number of the white corpuscles benzol caused them to disappear, while the red corpuscles, after a moderate diminution, remained unaffected. At the same time he found a marked aplasia of the bone marrow, the spleen, and the lymphatic apparatus. Regeneration occurred after the benzol was no longer given. These observations suggested to Professor von Korányi the investigation of the effects of benzol upon the blood in leukæmia. A series of patients suffering from leukæmia have been treated in his clinique and one of his assistants, Dr. Királyfi, is preparing a monograph upon the subject. Professor von Korányi gives a brief account in the note before us of one of his cases, and appends a general summary of his results. The patient was a woman, aged 32, who had noticed for seven months that her spleen was enlarging. She became gradually weaker and was unable to attend to her household duties at the time she was admitted to hospital on Jan. 30th, 1912. Her spleen extended to the middle line and a hand's breadth below the umbilicus. Examination of her blood gave 3,100,000 red corpuscles and 220,000 white per cubic millimetre. A differential count of the latter gave 70 per cent. of polymorphonuclears and 16 per cent. of myelocytes. On Feb. 1st she was treated with Roentgen rays, and by the 6th the white corpuscle count had fallen to 160,000, but by the 16th it had risen to 200,300. From this date 3 grammes of benzol were given daily until March 1st, when the dose was increased to 4 grammes. At this time the number of white corpuscles had fallen to 198,000 per cubic millimetre, by April 4th the number was 65,000, and on May 12th it was 12,000. By the middle of May it had fallen to 8000, and at the beginning of July it had remained at this level, although the treatment had been stopped. The spleen diminished in volume. The red corpuscles fell at first to 3,000,000 per cubic millimetre, but rose to 4,000,000 subsequently. The general condition of the patient also improved. Professor von Korányi concludes than benzol produces a notable improvement in the leukæmic blood picture, after a transitory increase in the number of white corpuscles. The diminution begins usually at the end of the second or beginning of the third week, at first slowly, then more rapidly. This result appears to occur in all forms of chronic leukæmia. In the later stages of the treatment the splenic enlargement becomes noticeably diminished, but the lymphatic glands are less obviously influenced. The general condition of the patient improves in the same way as after a successful treatment by Roentgen rays. Benzol appears to act more slowly than the last-mentioned measure, but Professor von Korányi finds that results may be obtained with benzol even when Roentgen treatment fails. Patients who have been treated by Roentgen rays usually react to benzol more quickly than those who have not been subjected to the rays. Small doses appear to stimulate the formation of white corpuscles; it is, therefore, best to give large doses in leukæmia; 3 to 4 grammes of benzol daily seem to be borne satisfactorily over a period of months. Unpleasant results sometimes occur, such as burning sensations in the stomach, hiccough, transitory tracheo-bronchitis, and vertigo. The gastric symptoms are usually obviated if oil is given with the benzol in gelatin capsules. If vertigo occurs it is best to try smaller doses. Professor von Korányi has also tried benzol with encouraging results in a case of polycythæmia with splenic enlargement in which the white corpuscle count was normal. At the end of the first week the number of red corpuscles had increased from nine to ten million per cubic millimetre, but with three more weeks it had fallen to 6,700,000. Sufficient time has not yet elapsed since the introduction of the treatment to allow a comparison to be made between its effects and those of Roentgen rays and thorium, as Professor von Korányi points out, but the results he has obtained are of a sort to render the method worthy of note, and we shall await the further results promised in Dr. Királyfi's paper with great interest.

[1] Ziegler's Beiträge, 1911, Band li., S. 576.

THE HYGIENE CONGRESS AND THE RUSH TO AMERICA.

A FREQUENT correspondent writes the following words of warning:—Members of the forthcoming International Congress of Hygiene and Demography who have not yet secured berths should not neglect the matter any longer. It is most unfortunate that the congresses when held in America take place just at the season when there is the greatest rush of passengers, mostly returning tourists, anxious to get back to the United States during the pleasantest season of the year. By the middle or end of September the terrible heat waves of summer are over and the winter blizzards are still a long way off. Therefore, berths on ships sailing westwards in September and October must be bespoke a long time in advance. There are plenty of ships, and excellent ships, available, but not many berths remain free. The hygienist who wants to test practically one of the most elaborate attempts at perfect ventilation ever made on board a ship should sail by the *Lusitania* on Sept. 7th. If this is too early the *Caronia*, a steady and comfortable boat, sails on the 10th. For those who have no time to spare, but must go straight through, there is the ocean greyhound, the *Campania*, on Sept. 14th, by which passengers would still reach Washington in time for the opening of the Congress on the 23rd. The German Norddeutscher Lloyd and the Hamburg-Amerika lines are already so full that the only chance of a berth is the possibility of some passengers altering their plans and giving up their berths. The White Star quick liner, the *Oceanic*, sails on the 11th, and the large and comfortable *Baltic* on Sept. 12th. The only Atlantic transport ship, the *Minnetonka*, leaves rather too soon—namely, the 7th, reaching New York on the 16th. The steady, slower, and cheaper boats of this line are much appreciated by those who value real comfort and economy more than the saving of a day or two. Viewed in this light, the French Transatlantic Co. are running two ships that are really democratic ships—the *Chicago* and the *Rochambeau*. They carry no first-class passengers, and offer no superfluous luxuries, but afford all that is

necessary for comfort. One of these, the *Chicago*, starts on Sept. 7th, and on the same day the celebrated first-class boat *La Provence* also leaves Havre. What with French society and French cuisine, it is not surprising if hardly a berth remains vacant on these ships also. A route patronised by the Americans, but not well known to the English, is the Cyprian Favre line from Marseilles. It has truly been said that to sail on these ships is more like embarking on a yachting cruise. Though the fare to and from America costs no more than the more moderate of the English and German charges, the passenger is entertained on board for nearly twice the length of time and visits some most interesting countries. He is taken to Naples, Palermo, and sometimes to Almeria in Spain, or he goes to Lisbon and the Azores, all of which opportunity for sight-seeing is included in the fare to America. Of this line the *Roma*, which leaves Marseilles on August 27th for Lisbon and the Azores, is due in New York on Sept. 12th. There are also the Anchor line, the Red Star line, the Holland America line, the Leland, the Dominion, and the American line that have passenger ships sailing in the early part of September, and yet, in spite of this extensive choice, it will be found that it is no easy matter to secure a berth at that time of the year, and the British delegates should be urged to act in this matter without delay. Many of them have not as yet secured their berths.

AFFECTIONS OF THE VOLUNTARY MUSCLES.

IT can hardly be denied that in proportion to their bulk and importance in the vital economy the muscles have received less attention from pathologists than any other system or organ. Yet undoubtedly in the case of general disease they suffer along with all other parts of the body, and some, at all events, of the weakness accompanying exhausting disorders may be due to actual muscular disturbance. It is regrettable that with the exception of a few rare affections, such as myositis ossificans and polymyositis, little is known of the changes which the muscles undergo, and even in these conditions our knowledge is not at all conclusive. We welcome, therefore, the paper recently published in the Proceedings of the Neurological Section of the Royal Society of Medicine[1] by Dr. R. C. Jewesbury and Dr. W. W. C. Topley, in which are set forth the results of their investigations into the histological changes met with in voluntary muscle in acute and chronic diseases. These writers find that in cases of wasting disease, such as cancer and tuberculosis, microscopical examination reveals marked changes in the muscles, the individual fibres varying notably in size and showing increase in the number of their nuclei. In some instances these were grouped into darkly staining masses, while in others they were arranged at the peripheral portions of swollen fibres, presenting when these were cut transversely the appearance of multinucleate giant cells. In acute diseases the muscles may exhibit hyaline or granular degeneration, but often seem normal. Healthy muscle shows little interstitial fat, but in diabetes and pancreatic disease this substance is increased in amount, as is shown not only by microscopical examination but by chemical analysis of the total fat present. An aggregation of fat droplets around the nuclei of the muscle cells is found in many cases and is scarcely to be looked on as pathological. True fatty degeneration of muscle was found constantly in animals infected with a lethal dose of diphtheritic toxin, in which life was prolonged for more than 24 hours; it was also found in a human subject dead of a severe but unclassified form of anæmia, and in a case of infective purpura. Increase in the quantity of glycogen present was seen in the leg muscles in three cases in which amputation had been performed for diabetic gangrene. Amyloid change was never discoverable. In the discussion which followed the paper Dr. F. W. Mott stated that in general paralysis of the insane fatty degeneration of the muscles was found in cases in which convulsions had occurred; it was also noted in persons dead of status epilepticus. He suggested that it was here due to exaggerated action of the muscles in the presence of a profound toxæmia.

[1] Proceedings of the Royal Society of Medicine, May 9th, 1912, vol. v., No. 8, June, 1912, Neurological Section, p. 161.

DEVELOPMENTS IN THE ROYAL SOCIETY OF MEDICINE.

THE Council of the Royal Society of Medicine has taken steps to form Sections of Ophthalmology and Tropical Medicine, and it is hoped that both these extensions of the society's scientific work will be in working order at the beginning of the next session. Nothing in the formation of these sections will be antagonistic towards the existing societies for the study of these subjects, whose work will thus be supplemented, while we may assume that full advantage will be taken of opportunities for valuable coöperative debates. The position of the Ophthalmological Society was explained in these columns last week. That society proposes to maintain its identity, but views with sympathy the proposal of the Royal Society to form an Ophthalmological Section, and is considering an alteration of its rules to give practical shape to its support. We understand that in the case of Fellows of the Royal Society of Medicine who join the new sections within the next six months the admission fees will be remitted.

A NEW VIEW OF THE ORIGIN OF PELLAGRA.

AT first sight it seems extremely unlikely that there can be any connexion between blackbirds and the spread of pellagra, but the opinion has been recently expressed that there is a probability that certain migratory birds, and more particularly blackbirds, are acting as reservoirs of the virus of pellagra, and that the actual parasite of the disease will in all probability turn out to be a trypanosome. Dr. M. L. Ravitch, of Louisville, Kentucky, who has had the assistance of Dr. Eisenman, the Kentucky State veterinarian, and of Dr. Purdy in his investigations, states that in certain local areas where pellagra cases have been somewhat numerous, a pellagra-like disease has also been found among horses and cattle. Some horses died with symptoms similar to those caused in South America and other tropical countries by trypanosoma equinum. These local areas are also said to have been infested by migratory birds, more especially blackbirds, which arrive in large numbers from the sunny south in the spring time and depart in the autumn. It appears also that Novy and McNeal, in their work on trypanosomes, found these protozoal parasites in the blood of migratory birds, and among these they placed blackbirds first on the list. It is admitted that there are difficulties in classifying the different species of trypanosomes arising from the fact that the same species in an animal host often presents many varieties, and these in other circumstances would most probably be regarded as being different species. It is surmised that mosquitoes or flies may act as transmitters of the pellagra virus to man and animals, but whether part of the cycle of development of the parasite follows the biting of the blackbird by the infected insect is not yet known. We are told by Dr. Ravitch that in the above-mentioned areas there has been of late years an unusual plague of flies, and it was observed that where measures were taken to reduce the number of these insects there was less pellagra, and on the other hand where these measures were neglected there were more attacks. The conclusion reached by Dr. Ravitch

and his co-workers is that blackbirds, and perhaps some other species of migratory birds, are responsible for the spread of pellagra. We gather that the suggestion is that the birds are infected in South America or some other tropical country and bring with them in their blood the infection to the United States where the local flies or mosquitoes act as transmitters of the virus obtained from the birds. The actual transmission may occur in one or other of the following ways: either by bites of flies or mosquitoes, or by accidental ingestion of the cysts of the parasite deposited by the insects upon leaves of plants. No trypanosomes, it is admitted, have yet been found in the blood of pellagra patients or in the blood of animals suffering from the pellagra-like disease, but Dr. Ravitch says that the indications are that from such blood some species of trypanosome will be isolated in the near future. This view of the etiology of pellagra is both novel and interesting, but it cannot be said that as yet it is supported by much solid evidence. Whether further inquiry will bring forward this necessary support remains to be seen. Meanwhile, we refrain from further comment, awaiting the results of the fresh investigations which, we are told, are now being carried out.

BROMIDE DELIRIUM.

IN the *Edinburgh Medical Journal* for June Dr. D. K. Henderson has reported a case of an unusual manifestation of the toxic action of sodium bromide—delirium. A man, aged 35 years, was admitted into the Royal Edinburgh Asylum on March 9th, 1912. There was no history of alcoholism or syphilis. In 1901 he had two or three attacks of *petit mal*. He remained free until 1905, when an attack of *grand mal* and several attacks of *petit mal* occurred. He took sodium bromide in 15 grain doses at night, and remained free from attacks until the first week of February, 1912, when a series of attacks of *petit mal* occurred, and he began to take about 240 grains of bromide daily. During the attacks he would stop in the middle of speaking, his eyes would roll, and in a moment he would speak where he had left off. He got hazier and hazier and would fall on the floor as if intoxicated, but no twitchings were noticed. He became very confused and had visual and auditory hallucinations, seeing faces at the window and hearing voices. He complained that the fish and the bread had a bad smell and taste, and his speech became thick and indistinct. He was admitted to hospital, where he talked nonsense and walked out from one of the windows. He then was sent to the asylum. On admission he was dazed, confused, and extremely restless. He said he felt well and had never been sick in his life, that he had three shops (he had only one), and expected to become very wealthy. He called one of the attendants his father. There was an intense bromide rash on the face and body. The tongue was thickly coated and the breath was very offensive. The pupils were slightly unequal and irregular and they reacted sluggishly to light but well on accommodation. He was unable to write such simple words as "cat" and "dog," making an illegible scrawl, and when asked to write his name wrote "William S" in a very shaky way. The tendon reflexes were slightly exaggerated, especially on the left side. Ankle clonus was obtained on the left side, but on both sides the plantar reflex was flexor. There was some tremor of the tongue, hands, and facial muscles. The Wassermann reaction was negative. After a week he became much clearer, but was still mentally confused. The bromide rash had to a considerable extent disappeared, and the breath was much less offensive. The pupils still reacted sluggishly to light, but better than formerly. His speech was now distinct and he could write correctly. On March 30th he had completely recovered and was discharged. The grandiose delusions, sluggish pupils, thick speech, difficulty in writing, exaggerated tendon reflexes, and tremors suggested general paralysis. But examination of the cerebro-spinal fluid was negative, except for a partial globulin reaction, and rapid recovery took place on withdrawal of the bromide. It is necessary to consider the relation of the attacks to a post-epileptic state. The epileptic attacks were all of the *petit mal* type, and his wife stated that after each he seemed in a normal condition. Post-epileptic confusional and maniacal states occur much more commonly after *grand mal* and do not manifest the frankly delirious features of this case. Moreover, it was only after the excessive doses of bromide that any definite mental change occurred. It seemed, therefore, that, although the mental condition may have been aggravated by the epilepsy, it bore no close relation to it.

VERONAL DERMATITIS.

THOUGH attention has been called to the dangers of veronal the fact that it may produce a rash is not generally known. In the *Journal of the American Medical Association* of June 29th Professor Joseph Zeisler has reported the following case. A man, aged 52 years, had shown pronounced susceptibility to a number of drugs. Thus the use of antipyrin regularly produced a localised urticarial eruption. Aspirin given for lumbago and other rheumatic affections produced vomiting, which lasted for 24 to 36 hours. Veronal was well borne at first, but afterwards produced dermatitis with almost mathematical regularity. Twelve to 18 hours after taking 5 to 8 grains marked itching of the glans penis and prepuce was noticed, and round reddish patches appeared, and in the course of a day or two became bright red and swollen, and gradually serous exudation occurred. This inflammatory condition, accompanied by almost intolerable itching, lasted until superficial crusting and desquamation terminated the process about eight or ten days after its onset. On noticing the relation of the inflammation to the taking of veronal the patient abandoned the drug for 18 months, and then during a restless night yielded to the temptation to take it again. The usual result followed. Professor Zeisler attributes the occurrence of the eruption after an initial tolerance to anaphylaxis. He observed a similar case in a neurotic man of middle age who used various hypnotics, and then took veronal by preference. He sought advice for a persistent eczematoid condition of the glans penis which, in consequence of the previous case, was attributed to its true cause. On discontinuing the drug and using mild local remedies relief quickly followed. In the *Journal of the American Medical Association* of Dec. 28th, 1907, Dr. P. G. Wolley reported in his own person the occurrence whenever he used veronal of a similar circumscribed patch of dermatitis, but on a different place—the first metacarpo-phalangeal joint of the left hand. In the last edition of "What to do in Cases of Poisoning," which recently appeared, the late Dr. William Murrell mentioned as one of the symptoms of veronal poisoning "a rash of confluent reddish-violet spots all over the body," but did not refer to any such localised eruptions as are reported above.

ON July 17th, the date on which the King, in connexion with his proposed visit to the Docks, was to have laid the foundation-stone of the extension of the London School of Tropical Medicine, a meeting was held at the Foreign Office to call attention to the recently issued appeal for £100,000 for the extension. Mr. Austen Chamberlain, who presided, detailed what had been already done in raising funds, and

described the great work done by the school. Sir Edward Grey paid a tribute to the initiative and impetus given to the school at its inception by Mr. Joseph Chamberlain, and to the devoted services of Sir Patrick Manson. He likewise instanced the importance of the work done by the school. Other speakers were Lord Crewe, Professor Blanchard, Mr. Lewis Harcourt, and Mr. A. Lampard. An executive committee to carry on the appeal for funds was appointed.

THE CLAIM OF SIR CHARLES BELL TO THE DISCOVERY OF MOTOR AND SENSORY NERVE CHANNELS.

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WHEN reading a book by Purkinje I found a reference to a paper by Sir Charles Bell. On reading this paper I was so struck by the sterling excellence of the work that I formed the opinion that the writer of such a paper was not likely to have made a claim to anything to which he was not entitled—that is to say, judging a man's character by his writings. As I had read Dr. A. D. Waller's writings [1] on the subject I determined to investigate the claim for myself. As Dr. Waller had said that many of Bell's statements could be interpreted in one or more ways I decided to investigate contemporary literature for statements made before the publication of Magendie in 1822.[2] Many very able men are obscure in their writings because of their extreme regard for minute accuracy; therefore, it is of the greatest importance to know their work as recorded by their fellow-workers.

The first paper I will consider is on Partial Paralysis, by John Shaw, read April 30th, 1822, before the Medical and Chirurgical Society of London, and published in their Transactions, vol. xii., p. 105. The paper is chiefly an account of facial paralysis caused by injury and various affections of the portio dura of the seventh nerve. The following extract is of importance as showing what Bell's opinions really were:—

> Why sensation should remain entire in a limb when all voluntary power over the action of its muscles is lost, or why muscular power should remain when feeling is gone? The attention of Galen was particularly directed to this question in consequence of his having been called upon by some of his contemporaries to account for the manner in which he had cured a partial paralysis of the finger by applications made to the spine. In answer, Galen told them that two sets of nerves went to every part, one to endow the skin with sensibility, the other to give the muscles the power of voluntary action. This opinion was probably founded on a mere theory; but the facts lately discovered, and the observations which have been noted in attending to the phenomena of disease, though they do not afford absolute proofs of the correctness of Galen's supposition, still they go far to establish the fact that every part of the body which is endowed with two or more powers is provided with a distinct nerve for each function.
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> The form of the nerves, which at the same time endow the skin with sensibility and the muscles with the power of voluntary motion, is such that they appear to be single cords; but if we examine the origin of any of those nerves we shall find that it is composed of two packets of fibres which arise from distinct parts of the spinal marrow. These origins are soon enveloped in the same sheath, so as to appear to a superficial observer to form a single nerve. It is not too much to suppose that either of these origins may be affected while the other remains entire. To prove this by ocular demonstration will perhaps be impossible, and therefore the question will probably remain undecided. But we have already seen examples of the consequence of injury to a nerve that has a single root—viz., the portio dura—for if we cut it there will be only one set of actions paralysed, while by dividing a nerve which has a double origin—viz., the fifth—we shall destroy two powers—viz., voluntary motion and sensibility. We know also that when we cut through the trunk of a nerve going to the hand we destroy both sensibility and the power of motion.
>
> In reference to this subject, I shall state the result of certain experiments which were made about 13 years ago by Mr. Charles Bell. The two sets of filaments by which each spinal nerve is connected to the spinal marrow were exposed. On irritating one set convulsion of the muscles upon which the nerve was distributed ensued, but when the other was excited no perceptible effect was produced. These experiments we have often repeated and always with the same results; but from the violence necessarily used in making them it has been difficult to ascertain which of the filaments bestows sensibility on the part. It was easily shown that if only the posterior set was destroyed, the voluntary power over the muscles continued unimpaired, but the pain necessarily attendant upon the performance of the experiment prevented us from judging of the degree of sensibility remaining in the part. It was, I believe, the result of these experiments which induced Mr. Bell to give an opinion nearly similar to that of Galen in a short essay on the Anatomy of the Brain, which was printed and distributed among his friends in 1809.
>
> If the view which I have here taken of this question be correct it may lead to this rule of practice. If only one set of functions of a spinal nerve be deficient, we should apply our remedies to that part of the system from which the nerve arises; but if both functions are impaired we must then direct our inquiries to the state of the nervè in the whole course, from its origin to its distribution, as the loss of power is probably owing to some affection of a part of the nerve after the two sets of filaments by which it arises are united together.

Shaw also in an account of a case of facial paralysis states:—

> On exciting those actions which by experiments on animals we had proved to depend on the fifth pair of nerves, they were all found perfect—i.e., the patient could bring the orbicularis oris into such action as to hold a pencil with it; he could throw a piece of bread from the right to the left side of his mouth by the action of the buccinator, and he could close his jaws with equal force on both sides. The sensibility of the paralysed cheek was equal to that of the other side.

On page 139 he considers the effects of section and stimulation of the facial nerve in dogs and a monkey. On page 141 he combats the old idea that, although the parts might be deprived of the supply of nerves from the portio dura, they would still receive sufficient nervous influence from those of the fifth pair. On page 121 he calls attention to the wasting of the muscles of the face from not being called into action for years through paralysis of the portio dura. On the same page he gives an example of the effect produced on the growth of the muscles of the face by an injury of the portio dura in an experiment made upon a young dog. Two other papers by Shaw should also be examined—*Quarterly Journal of Science, Literature, and the Arts*, 1822, vol. xii., p. 231, dated Dec. 1st, 1821; and vol. xiii., p. 120, dated March, 1822. Shaw relates how at Magendie's request he demonstrated to a sceptical audience the effect of section of the facial in a horse causing paralysis of the nostrils.

I will now give quotations from the book which Dr. Waller states "is of very little scientific value." Bell writes:—

> The prevailing doctrine of the anatomical schools is that the whole brain is a common sensorium, that the extremities of the nerves are organised, so that each is fitted to receive a peculiar impression, or that they are distinguished from each other only by delicacy of structure and by a corresponding delicacy of sensation; that the nerve of the eye, for example, differs from the nerve of touch only in the degree of its sensibility. It is imagined that impressions thus differing in kind are carried along the nerves to the sensorium and presented to the mind; and that the mind by the same nerves which receive sensation sends out the mandate of the will to the moving parts of the body. It is further imagined that there is a set of nerves called vital nerves which are less strictly connected with the sensorium or which have upon them knots cutting off the course of sensation and thereby excluding the vital motions from the government of the will. In opposition to these opinions I have to offer reasons for believing that the cerebrum and cerebellum are different in function as in form, that the parts of the cerebrum have different functions, and that the nerves which we trace in the body are not single nerves possessing various powers, but bundles of different nerves whose filaments are united for the convenience of distribution, but which are distinct in office as they are in origin from the brain. That the external organs of the senses have the matter of the nerves adapted to receive certain impressions while the corresponding organs of the brain are put in activity by the external excitement. That the idea or perception is according to the part of the brain to which the nerve is attached, and that each organ has a certain limited number of changes to be wrought upon it by the external impression. That the nerves of sense, the nerves of motion, and the vital nerves are distinct through their whole course, though they seem sometimes united in one bundle; and that they depend for their attributes on the organs of the brain to which they are severally attached.

On page 9 he draws attention to the fact that "an impression made on two different nerves of sense, though with the same instrument, will produce two distinct sensations, and that the ideas resulting will only have relation to the organ affected." Page 22: The experiment on the nerve roots. "On laying bare the roots of the spinal nerves I found that I could cut across the posterior fasciculus of nerves which took its origin from the posterior portion of the spinal marrow without convulsing the muscles of the back, but that on touching the anterior fasciculus with the point of the knife, the muscles of the back were immediately convulsed." Page 29: "From the medullary matter of the hemispheres, again, there pass down, converging to the crura, striæ, which is the medullary matter taking upon it the character of a nerve; for from the crura cerebri or its prolongation in the anterior fasciculi of the spinal marrow go off the nerves of motion." On page 31 he states that as there are certain parts of the brain which cause convulsions when injured and other parts which do not, the latter have higher functions to perform. Page 32: Grey parts of brain

[1] British Association Report, 1911, p. 287. THE LANCET, vol. i., 1911, p. 470, et seq.
[2] Journal de Physiologie, tome ii., p. 296, August, 1822.

seat of higher powers. Page 33: When he found surfaces of hemispheres diseased there was derangement of mind during life.

Now it is quite clear that Bell recognised the motor character of the portio dura of the seventh nerve in opposition to the statements of Dr. Waller. Dr. Waller writes: "Any information concerning the distinction between the sensory and motor portions of the fifth nerve, or any clear definition of the motor character of the portio dura of the seventh nerve, would justify us in reckoning Bell as having participated with Magendie in the discovery of the distinction between motor and sensory nerves." It will be seen that Bell was not certain which of the filaments conveyed sensation, but he definitely states which was motor. It is easy to see how anyone on reading this account might be impelled to make an improved experiment to decide the point. Magendie[3] himself writes of his further experiments: "Seulement ils semblent établir que le sentiment n'est pas exclusivement dans les racines postérieures, non plus que le mouvement dans les antérieures."

Dr. Waller makes a special point of the slight corrections to which he has drawn attention. In my opinion, Bell regarded these alterations as unimportant, especially in light of the evidence I have given. He knew that anyone could easily compare his work with the original in the Philosophical Transactions which is in the possession of every important scientific body. Bell made his claim immediately after the publication of Magendie's work.

These emendations would show that Bell considered he had been wrong in his opinion of the functions of some of the branches of the fifth nerve. Shaw (page 111) discusses the relative actions depending on the fifth pair of nerves which were found perfect in facial paralysis. In this connexion in Gray's "Anatomy," 1880, it is stated in a footnote: "It is doubtful whether the buccal branch conveys only sensory power to the buccinator or motor influence likewise." It is very probable that Bell himself made the discovery which led to these corrections; no doubt some anatomist could inform us on the point. They have, however, nothing whatever to do with the point under consideration. Even as affecting Bell's credit they may have been made by an assistant to whom Bell had delegated the task of correcting the proofs and had passed unnoticed by Bell himself.

Bell's fundamental proposition was: "No organ which possesses only one property or endowment has more than one nerve, however exquisite the sense or action may be, but if two nerves coming from different sources are directed to one part, this is the sign of a double function performed by it, and if a part or organ have many distinct nerves, we may be certain that instead of having a mere accumulation of nervous power, it possesses distinct powers or enters into different combinations, in proportion to the number of its nerves."

The importance of these views and the experiments naturally arising from them was thoroughly recognised in France at the time. In this connexion I will quote the conclusions of P. Flourens.[4]

On voit ce qu'a fait M. Bell. 1. Il a eu, le premier l'idée que chaque nerf pouvait être *double*, ou composé de deux. 2. Il a, le premier de tous les physiologistes, porté l'expérience sur les *racines* des nerfs. 3. Enfin, de son expérience, quoique incomplète, il a conclu la fonction distincte de chaque racine. Tout cela a été fait par M. Bell dix ans avant M. Magendie.

No one is less inclined than myself to depreciate a single scientific fact, but men of all ages have recognised that those who devise new systems or propound new principles which enable men to discover large numbers of new facts are entitled to more credit than those who discover a single isolated fact, no matter how important. We must not confuse one of the supporting beams for the whole house or even the plan which enables other houses to be built. In consequence of the discussion which has ensued too much importance has been attached to the correct deductions made from an isolated experiment. Who shall say whether this experiment as an experiment ranks higher than other experiments on the nervous system which are made at the present day and which are equally confirmative of Bell's views? Bell enunciated a certain system and proceeded to test it in every way. He then published a number of papers which showed the truth of his views and which made subsequent discoveries an absolute certainty.

I regret to see that Dr. Waller has not written one word of praise of one of our greatest men, but has represented him in a most unfavourable light, and in my opinion quite unjustifiably. Those who were living at the time and who examined Bell's claim were much better able to judge of its truth than the present generation from only one or two documents. They had evidence, as, for instance, that of individuals, which we do not possess, and a man would not be likely to lay claim to a discovery and that he had taught certain things when all his pupils knew that he had taught the opposite. Further information may perhaps be gained by following the line of investigation I have suggested and examining contemporary literature bearing on the subject.

In conclusion, I submit that Dr. Waller has not made out his case against Bell in which he seeks to deprive Bell of all credit in the discovery of motor and sensory nerve channels.

[3] Journal de Physiol. Expér., October, 1822.

[4] Éloge Historique de François Magendie suivi d'un discussion respectifs de MM. Bell et Magendie à la découverte des fonctions distinctes des racines des nerfs, 1858.

THE LONDON COUNTY COUNCIL AND MEDICAL AFFAIRS.

Medical Treatment of School Children.

A REPORT was presented by the Children's Care Committee to the Education Committee of the London County Council on July 17th with reference to the recent conference between representatives of the Board of Education and the Council as to arrangements for medical treatment in London.[1]

The Care Committee stated that the Board contemplated that the Council's scheme would continue composite in character, and might properly continue to include:—

1. Hospitals with which the Council would have agreements on the basis of that now in operation at the London Hospital, where the special arrangements practically constituted a children's treatment centre within the hospital. 2. Voluntary institutions of various kinds, other than hospitals, with which the Council would have agreements. 3. Medical treatment centres conducted on the lines of those now opened at Norwood and Wandsworth, but with certain modifications.

It was understood that the grounds upon which the Board considered such modifications necessary were:—

(*a*) That the centres as at present constituted were not sufficiently in touch with the Council's system of medical inspection; (*b*) that the centres were not sufficiently under the direct supervision of the Council; (*c*) that they were not available for the further examination of school children referred by the inspecting medical officer, or for the examination of special cases referred by the school nurse, school attendance officer, head teacher, or care committee; (*d*) that they were not available for the treatment of minor ailments.

The modifications suggested by the Board for the Council's consideration were:—

1. The medical staff should be nominated by the committee of local medical practitioners, but appointed by the Council, or at all events selected by them for appointment. 2. Whether a centre was or was not owned or rented by a committee of local medical practitioners, the administrative control and supervision of the work in the centre should be vested in the Council. 3. The centres should be available for use in connexion with the Council's system of medical inspection of school children, for the further examination of children, and should provide for the treatment of minor ailments. It was in the Board's view essential that provision should be made at the treatment centres for the treatment of minor ailments. The Board recognised that there would be particular treatment centres at which, owing to the exceptional circumstances, such provision would not be required, but it considered that the inclusion of such provision should be the normal arrangement.

The Children's Care Committee stated that, generally, it acquiesced in these views.

In connexion with any arrangements that might be made with hospitals, the Board stated that it was prepared to regard as satisfactory arrangements such as were in operation at the London Hospital; the arrangements in force at certain other hospitals, which differed not only in degree, but in kind, could not be regarded as satisfactory. If these could be modified so as to bring them into line with the arrangements at the London Hospital the Board would be prepared to regard them as a satisfactory part of the Council's scheme of treatment, but failing this it looked forward to a gradual transfer of the work done at these hospitals to other hospitals where the arrangements were of the London

[1] See THE LANCET, May 25th, p. 1428.

Hospital type, or to medical treatment centres or to school clinics of various types.

The Board reminded the Council that the problem of the medical treatment of school children could not yet be said to have reached a final solution; that the methods of such treatment were undergoing at the present time somewhat rapid evolution; and that it should, therefore, be clearly understood that the views set out above could only represent what the Board regarded as a reasonably satisfactory way of dealing with the needs of the area at the present time and in the near future.

Proposals by the Committee.

In dealing with the questions raised by the Board the Children's Care Committee stated that it would shortly have under consideration the question of the possibility (1) of establishing, in connexion with hospitals with which the Council had agreements, a system which would produce the same results as were obtained at the London Hospital; and (2) of making arrangements for re-inspection and re-examination of children and the treatment of minor ailments in connexion with certain hospitals with which the Council at present had no agreement.

As regards the medical treatment centres it would be noticed that the three important respects in which provision was to be made were (1) treatment for affections of the eye and ear, nose, and throat involving operations, and ringworm cases; (2) the re-inspection and re-examination of children; and (3) treatment for minor ailments. With reference to (1), the Council had already determined the main terms and conditions under which such treatment should be given; but the committee made further proposals which it thought would meet the additional requirements of the Board. With regard to (2), it would be possible to arrange with the committees of local practitioners for the centres to be available for use by the Council in connexion with the medical inspection of school children, and for the re-examination of children. The committee suggested that minor ailments should include discharging ears, external eye diseases—e.g., blepharitis and conjunctivitis, skin diseases, such as impetigo and sores, and such other conditions as required the daily services of a nurse. It was considered that one nurse working full-time could deal with 1100 cases a year, and that for this number the services of a doctor working on one half-day a week, at a cost of £50 a year, would be required. A sum of £100 should be paid for nursing treatment in connexion with each centre. This would cover the services of a nurse at the centre, and also nursing treatment (including dressings, lotions, &c.) to be given in the homes of the children, and all necessary equipment and travelling expenses for the nurses. For these cases, also, some allowance should be made having regard to the additional cleaning and wear and tear involved in a more extensive use of the premises provided by the local practitioners and to the supply by them of dressings, lotions, &c., for treatment at the centre. Moreover, the premises would be used for the purpose of re-inspection and re-examination. This would involve their use on Saturday mornings for which no provision had been made, and the committee therefore suggested that a capitation payment of 4*d.* for minor ailments would be an equitable arrangement in respect of these extra services.

The committee gave detailed particulars of the number of cases to be dealt with at the centres controlled by medical practitioners at Fulham, Hackney, Islington, Peckham, and St. Pancras, and at the Poplar school treatment centre for ear, nose and throat affections, ringworm, and minor ailments. The estimated cost of the centres varied from £420 to £950 per annum. It was necessary that some provision should be made in the Lewisham district. It was not possible to arrange for a committee of local medical practitioners to provide a centre in Lewisham, unless a minimum of 1760 cases was guaranteed, and as the committee was not satisfied that it was possible to supply this number it proposed, for the present, to accept an offer which had been made by the Home and Infirmary for Sick Children to provide treatment for 250 children a year suffering from ear, nose, and throat defects. The total annual cost would be £80. It was also proposed to accept an offer by the St. George's Dispensary, Blackfriars, to treat 440 ear, nose, and throat cases. The committee also submitted proposals for the treatment of eye cases at the Fulham, Hackney, Islington, Peckham, Poplar, and St. Pancras centres, and at the Home and Infirmary for Sick Children, Lewisham. The cost of these proposals varied from £55 to £300.

The annual cost of all the schemes described in the report would be £4672 or £5527 if the maximum number of cases was treated. The annual cost of the treatment of minor ailments at each centre would be £168 6*s.* 8*d.*, made up as follows: nurse and equipment, £100; medical man, £50; capitation payment (1100 cases a year at 4*d.* each), £18 6*s.* 8*d.* The total cost at the eight centres would be £1346.

The Education Committee approved these proposals and decided to recommend them to the Council.

MEDICINE AND THE LAW.

Rain as an Adulterator.

AT the Mansfield police-court recently a solicitor raised on behalf of his client, a farmer charged with milk adulteration, a singular defence. The statement that the adulteration can be due to rain has, we believe, been heard before in the courts as an excuse for the presence of an undue amount of water or lack of a proper proportion of fat in milk, but it has not always been considered credible. In the present instance it was apparently accepted, for the summons was dismissed. The solicitor is reported as having put the case thus: "The deficiency was due to the hand of Heaven in allowing the cows to feed on wet grass the night before and permitting the rain to fall heavily while the defendant was taking his churn with a leaky top along country lanes." The defendant gave evidence that rain was pouring into the churn when the inspector stopped him and demanded a sample. He added: "No rational person would come out with a waterproof and umbrella and select an archway for shelter in order to buy new milk." In comment, it may be observed, assuming the arguments cited to have influenced the bench who heard the case, that the farmer and not the hand of Heaven usually decides the question where cows are to feed, and that it is for the former also to take precautions against foreign matter, such as water, getting into his milk churns. Apparently on the occasion referred to there was heavy rain, but this occurs frequently in thundery weather, and there was also an archway in which to take shelter until it was over.

Dental Treatment by an Unqualified Person.

At the Clerkenwell police court recently William Hawkins, senior, of Gray's Inn-road, trading as the Williams Artificial Teeth Institute, was summoned on the information of F. Robertson, a teacher under the London County Council, the summons alleging the use of a title or description implying registration. The evidence showed that Robertson was treated by the defendant, but when the certificate necessary for production to his employers was asked for it was not forthcoming. He alleged that before treatment he was told that a certificate could be given him, also that a subsequent letter asking whether he was being treated by a registered dentist was not replied to, but that on his calling and complaining the return of his money was offered. Mr. d'Eyncourt held that even if there had been a statement that a certificate could be given it did not constitute a use of titles implying registration, and that the evidence did not show that the offence alleged in the summons had been committed, and he accordingly dismissed it.

Action by Medical Man to Recover Fees.

In the Clerkenwell county court recently an action was brought by a medical man to recover a sum of 17*s.* 6*d.* as fees due to him from the Duke of Argyll Juvenile Foresters Friendly Society. The defendants counter-claimed for 17*s.* 6*d.* paid by them to another medical man in respect of the same case. The plaintiff's case was to the effect that he was called upon to attend a case for the Friendly Society, but found that another medical man had already seen the case and had administered treatment, so he declined to do anything, being of the opinion that this was the proper course to adopt. The second medical man stated that having been called in, he found the patient, a boy, suffering great pain and in urgent need of treatment,

which he administered. On learning that the patient was the client of another he advised the mother to call that gentleman, and he only continued to treat the case when he found that he did not come. His honour Judge Howland Roberts found that the case, so far as the second medical man was concerned, was one of urgency, and that no principle of medical ethics arose which should affect his decision. He accordingly gave judgment for the defendants on claim and counterclaim.

METROPOLITAN HOSPITAL SUNDAY FUND.

THE following are among the amounts received up to July 12th at the Mansion House in addition to those we have already published. The total is now about £48,000.

	£	s.	d.
West London Synagogue	321	0	0
St. George's, Hanover-square, with St. Mary's, Bourdon-street	247	0	0
Great Synagogue, Aldgate	234	0	0
St. Stephen's, South Dulwich	178	0	0
Hampstead Synagogue	148	0	0
Westminster Abbey	126	0	0
Christ Church, Mayfair	122	0	0
All Saints, Margaret-street	112	0	0
Central Synagogue	107	0	0
Brockwell Park Open-Air Mission	105	0	0
New West End Synagogue	104	0	0
All Souls, South Hampstead...	102	0	0
Annunciation, St. Marylebone	100	0	0
St. Leonard's and All Saints, Streatham...	95	0	0
St. John's, Kensington...	93	0	0
St. Paul's, Portman-square	87	0	0
Bayswater Synagogue...	86	0	0
Wandsworth Parish Church, with Holy Trinity	85	0	0
St. Bartholomew's, Sydenham	83	0	0
Holy Trinity, Sydenham	83	0	0
St. Barnabas's, Kensington	80	0	0
St. Michael's, Paddington	79	0	0
Holy Trinity, St. Marylebone	72	0	0
Stoke Newington Parish Church	71	0	0
St. Mary's, Kilburn	70	0	0
St. John's, Forest Hill...	67	0	0
Barking Parish Church and Missions	66	0	0
St. John's Wood Presbyterian Church	64	0	0
Christ Church, Crouch End...	63	0	0
St. John's Wood Synagogue...	62	0	0
Regent-square Presbyterian Church, King's Cross	62	0	0
St. Peter's, Ealing	58	0	0
St. Paul's, Finchley	54	0	0
St. Saviour's, Ealing	52	0	0
"P"	50	0	0
Chapel Royal, Hampton Court	48	0	0
St. James's, Clapham Park	47	0	0
St. Marylebone Presbyterian Church	47	0	0
German Church, Camberwell	47	0	0
Hornchurch Churches	42	0	0
St. Agnes's, Kennington	41	0	0
Ascension, Balham	39	0	0
St. Luke's, Westbourne Park	39	0	0
Christ Church, Ealing	39	0	0
St. Augustine's, Honor Oak	38	0	0
St. German's, Blackheath	38	0	0
St. Michael's, Highgate	37	0	0
Trinity Presbyterian Church, Bromley	36	0	0
Heath-street Baptist Church, Hampstead	34	0	0
St. Bartholomew the Great, E.C.	33	0	0
St. John's, Downshire Hill	32	0	0
Dalston Synagogue	32	0	0
St. Cuthbert's, West Hampstead	31	0	0
St. John the Divine, Kennington...	30	0	0

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 95 largest English towns, having an estimated population of 17,639,816 persons in the middle of this year, 8156 births and 3906 deaths were registered during the week ending July 20th. The annual rate of mortality in these towns, which had been 11·1, 10·8, and 11·6 in the three preceding weeks, fell slightly to 11·5 per 1000 in the week under notice. During the first three weeks of the current quarter the mean annual death-rate in these 95 towns averaged 11·3 per 1000, while in London during the same period the average death-rate was also 11·3 per 1000. The annual death-rates last week in the several towns ranged from 5·3 in Reading, 5·4 in Hornsey, 6·1 in Swindon, 6·2 in Lincoln, and 6·3 in Ilford, to 16·4 in Swansea, 16·8 in Wigan, 17·6 in Bury, and 18·5 in Dewsbury.

The 3906 deaths from all causes in the 95 towns last week were 24 fewer than the number in the previous week, and included 391 which were referred to the principal epidemic diseases, against 376, 342, and 378 in the three preceding weeks. Of these 391 deaths, 156 resulted from measles, 99 from infantile diarrhœal diseases, 67 from whooping-cough, 36 from diphtheria, 19 from scarlet fever, and 14 from enteric fever, but not one from small-pox. The mean annual death-rate from these epidemic diseases last week was equal to 1·2 per 1000, against 1·0 and 1·1 in the two preceding weeks. The deaths attributed to measles, which had been 173, 139, and 148 in the three preceding weeks, further rose to 156 last week, and caused the highest annual death-rates of 2·0 in Liverpool and in Wakefield, 3·5 in Gateshead, 4·4 in Merthyr Tydfil, and 6·4 in Middlesbrough. The deaths of infants under two years of age referred to diarrhœa and enteritis, which had been 75, 72, and 89 in the three preceding weeks, further rose to 99 last week, and included 41 in London and in suburban districts, 9 in Manchester, 6 in Liverpool, and 3 each in Birmingham and in Blackburn. The fatal cases of whooping-cough, which had been 61, 69, and 72 in the three preceding weeks, were 67 last week; 30 deaths were recorded in London and in suburban districts, 11 in Liverpool, 3 in Salford, and 2 in each of six other towns. The deaths attributed to diphtheria last week numbered 36, and were 2 above the average in the six preceding weeks; 10 deaths occurred in London and in suburban districts, and 3 each in Cambridge and in Birmingham. The deaths referred to scarlet fever, which had been 21, 15, and 27 in the three preceding weeks, fell to 19 last week, and included 4 in London, but not more than a single death in any of the other 94 towns. The fatal cases of enteric fever, which had been 15, 10, and 8 in the three preceding weeks, rose to 14 last week, and included 6 in London and in suburban districts, and 2 each in Leicester and in Warrington.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever hospitals, which had steadily increased from 1213 to 1477 in the eight preceding weeks, further rose to 1482 on Saturday last; 190 new cases of this disease were admitted to these institutions during the week, against 195, 201, and 227 in the three preceding weeks. These hospitals also contained on Saturday last 866 cases of diphtheria, 630 of measles, 422 of whooping-cough, and 29 of enteric fever, but not one of small-pox. The 1058 deaths from all causes in London were 78 in excess of the number in the preceding week, and were equal to an annual death-rate of 12·2 per 1000. The deaths referred to diseases of the respiratory system, which had been 126, 131 and 127 in the three preceding weeks, were 117 last week, and were 4 in excess of the number in the corresponding week of last year.

Of the 3906 deaths from all causes in the 95 towns last week, 214 resulted from different forms of violence, and 378 were the subject of coroners' inquests. The causes of 21, or 0·5 per cent., of the deaths registered were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London, Portsmouth, Manchester, Leeds, Sheffield, and in 79 other smaller towns. The 21 uncertified deaths included 6 in Birmingham, 3 in Liverpool, and 3 in Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 18 largest Scotch towns, with an aggregate population estimated at 2,182,400 persons in the middle of this year, 1155 births and 567 deaths were registered during the week ended July 20th. The annual rate of mortality in these towns, which had been 14·6 and 13·4 per 1000 in the two preceding weeks, rose to 13·6 per 1000 in the week under notice. During the first three weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 13·9 per 1000, against 11·3 per 1000 in the 95 large English towns during the same period. Among the several Scotch towns the annual death-rates last week ranged from 3·9 in Clydebank, 8·8 in Motherwell, and 9·2 in Paisley and in Govan, to 20·8 in Dundee and 21·7 in Perth.

The 567 deaths from all causes were 7 more than the number in the previous week, and included 54 which were

referred to the principal epidemic diseases, against 60 and 50 in the two preceding weeks. Of these 54 deaths, 5 were referred to measles, 23 to infantile diarrhœal diseases, 19 to whooping-cough, 5 to diphtheria, 1 to typhus, and 1 to scarlet fever, but not one either to enteric fever or to small-pox. These 54 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·3 per 1000, against 1·2 in the 95 large English towns. The deaths attributed to measles, which had been 32, 18, and 16 in the three preceding weeks, fell to 5 last week, and included 2 in Dundee and 1 each in Glasgow, Coatbridge, and Ayr. The deaths of infants under 2 years of age referred to diarrhœa and enteritis, which had been 9, 13, and 16 in the three preceding weeks, rose to 23 last week; 12 deaths were registered in Glasgow, 3 in Dundee, 2 in Govan, and 1 in each of six other towns. The fatal cases of whooping-cough, which had been 8, 15, and 9 in the three preceding weeks, were 19 last week, of which number 6 occurred in Glasgow, 4 in Edinburgh, 3 in Aberdeen, and 2 in Dundee. The fatal case of typhus occurred in Paisley. The death from scarlet fever and 3 of the deaths from diphtheria occurred in Glasgow.

The deaths referred to diseases of the respiratory system in the 18 Scotch towns, which had steadily decreased from 107 to 61 in the five preceding weeks, rose again to 66 last week; 27 deaths were attributed to different forms of violence, against 20 and 30 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 22 town districts of Ireland, having an estimated population of 1,157,014 persons in the middle of this year, 584 births and 321 deaths were registered during the week ending July 20th. The annual rate of mortality in these towns, which had been 13·8 and 15·7 per 1000 in the two preceding weeks, fell to 14·5 per 1000 in the week under notice. During the first three weeks of the current quarter the mean annual death-rate in these Irish towns averaged 14·7 per 1000; in the 95 large English towns the corresponding death-rate did not exceed 11·3 per 1000, while in the 18 Scotch towns it was equal to 13·9 per 1000. The annual death-rates in the several Irish towns last week were equal to 15·4 in Dublin (against 12·2 in London), 14·5 in Belfast, 10·2 in Cork, 15·3 in Londonderry, 19·0 in Limerick, and 15·2 in Waterford, while in the 16 smaller towns the mean annual death-rate was 12·7 per 1000.

The 321 deaths from all causes in the 22 Irish towns were 28 fewer than the number in the previous week, and included 34 which were referred to the principal epidemic diseases, against numbers declining from 37 to 26 in the five preceding weeks; of these 34 deaths, 17 resulted from diarrhœal diseases, 10 from measles, 5 from whooping-cough, and 2 from diphtheria, but not one either from small-pox, from scarlet fever, or from enteric fever. These 34 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·5 per 1000, or 0·2 more than that in the 18 Scotch towns; in the 95 large English towns the annual death-rate from these diseases last week was equal to 1·2 per 1000. The deaths attributed to diarrhœa and enteritis, which had been 10, 6, and 11 in the three preceding weeks, rose to 17 last week, and included 15 of infants under 2 years of age; 7 deaths were recorded in Dublin, 5 in Belfast, and 4 in Limerick. The deaths referred to measles, which had been 5, 9, and 9 in the three preceding weeks, were 10 last week, and included 7 in Dublin and 3 in Belfast. The fatal cases of whooping-cough, which had been 8 and 3 in the two preceding weeks, were 5 last week, and included 2 in Belfast and 2 in Newry. The 2 fatal cases of diphtheria registered during the week occurred in Dublin.

The deaths referred to diseases of the respiratory system in the 22 Irish towns, which had been 63, 47, and 55 in the three preceding weeks, fell to 37 in the week under notice. Of the 321 deaths from all causes, 112, or 34·9 per cent., occurred in public institutions, and 5 resulted from different forms of violence. The causes of 16, or 5·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 95 large English towns the proportion of uncertified causes of death did not exceed 0·5 per cent.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

Colonel R. I. D. Hackett, assistant director of medical services at Abbottabad, Second (Rawal Pindi) Division, has arrived home on leave of absence from India.

Lieutenant-Colonel R. Kirkpatrick, C.M.G., lately commanding the 33rd Company of the Royal Army Medical Corps at Cairo, has been appointed Assistant Director of Medical Services at Bloemfontein, Orange Free State District, in succession to Colonel F. J. Lambkin, deceased. Lieutenant-Colonel W. S. Dowman has taken up duty at Kingston-on-Thames on transfer from charge of the Military Hospital at Northampton.

Major C. B. Lawson has been appointed Specialist in Operative Surgery at the Military Hospital, Shorncliffe. Major P. S. Lelean, specialist sanitary officer to the Seventh (Meerut) Division, has been granted 60 days' privilege leave of absence home from India with permission to revert to the Home Establishment at its conclusion. Major T. H. M. Clarke, C.M.G., D.S.O., medical inspector of recruits in the Southern Command, has been selected for appointment as Surgeon to the Royal Hospital, Kilmainham, Dublin, in succession to Lieutenant-Colonel R. J. Windle, whose tenure of the appointment has expired. Major J. D. G. Macpherson has arrived home on leave of absence fram India. Major R. J. W. Mawhinny, at present holding charge of the military hospital at Athlone, has been placed under orders for service abroad during the coming trooping season. Major J. J. W. Prescott has joined the Southern Command for duty on transfer from Newcastle-on-Tyne. Major G. B. Riddick has been appointed Staff-Surgeon to the Headquarters of the Burma Division at Maymyo Cantonment. Major D. D. Shanahan has taken up duty at Ootacamund as Staff Officer for Medical Mobilisation Stores to the Ninth (Secunderabad) Division. Major B. Watts has been appointed Specialist in Midwifery and Diseases of Women and Children to the Seventh (Meerut) Division. Major A. G. Thompson has been transferred from Ferozopore Cantonment to the Military Hospital at Pachmarhi. Major H. B. G. Walton has been appointed Staff-Surgeon to the Headquarters Staff, Bareilly Brigade, and placed in charge of the Bacteriological Research Laboratory at Bareilly.

Captain W. J. Weston, on arrival home from Gibraltar, has been appointed to the Irish Command. Captain T. S. Blackwell, on completion of a tour of service at Bhamo, Burma, has been detailed for duty in the Belfast District. Captain J. S. Dunn, on return from service in India, has been posted to the Eastern Command. Captain G. P. A. Bracken has been transferred from Secunderabad to the Military Hospital at Malappuram. Captain C. G. Browne has arrived home on leave of absence from the Military Hospital at Lucknow. Captain J. E. M. Boyd has been selected for appointment as Specialist in the Prevention of Disease and placed in charge of the Bacteriological Research Laboratory, Ferozopore Brigade, India. Captain G. de la Cour, specialist in operative surgery at Bangalore, has been granted eight months' leave of absence home from India by H.E. the Commander-in-Chief. Captain W. J. E. Bell has been transferred from Golden Hill to the Military Hospital at Cosham. Captain J. A. B. Sim has arrived home for duty from Bermuda. Captain T. C. C. Leslie, on return from South Africa, has been appointed for duty in the Cork District. The following officers have been selected to attend the next courses for promotion at the Royal Army Medical College: Captain G. B. Edwards, Captain T. C. C. Leslie, Captain J. A. B. Sim, and Captain W. J. E. Bell.

Lieutenant D. Reynolds and Lieutenant C. D. K. Seaver, at present serving at Limerick and Fethard respectively, have been placed under orders for service abroad during the coming trooping season. Lieutenant A. P. O'Connor has been appointed Company Officer to the Eleventh Company, Royal Army Medical Corps, stationed at the Military Hospital, Shorncliffe. Lieutenant R. Gale has taken up duty in Egypt in the Public Health Department. Lieutenant M. J. Williamson, on arrival in South Africa for a tour of foreign service, has been appointed to the Military Hospital at Bloemfontein for duty. Lieutenant P. S. Tomlinson has been transferred from the Eighth (Lucknow) Division to the Allahabad Brigade. Lieutenant E. C. Stoney has joined for

duty at the Military Hospital, Secunderabad. Lieutenant A. S. Cane has taken up duty in charge of troops at St. John's Wood Barracks, London. Lieutenant A. S. Heale has been transferred from Cosham to Hilsea.

INDIAN MEDICAL SERVICE.

Lieutenant-Colonel H. W. Pilgrim, Bengal Presidency, has arrived home on leave of absence from India. The services of Lieutenant-Colonel C. H. James have been placed at the disposal of the Government of India by the Foreign Office. Lieutenant-Colonel W. Ronaldson Clark, civil surgeon at Lahore and professor of forensic medicine at the Medical College, Lahore, has been granted six months' leave of absence.

Major E. W. D. Greig, assistant director of the Central Research Institute at Kasauli, has been placed on special duty under the Sanitary Commissioner with the Government of India. Major G. Y. C. Hunter has been appointed to the Jail Department in Bengal Presidency in succession to Major J. M. Woolley, appointed Senior Medical Officer, Port Blair. Major S. R. Christophers, assistant director of the Central Research Institute at Kasauli, has been granted 15 months' leave of absence home from India. The services of Major E. L. Ward have been placed at the disposal of the Public Works Department of the Government of India. Major J. Stephenson has arrived home on leave of absence from India. Major S. A. Harris, Deputy Commissioner of the First Circle, has been selected to officiate as Sanitary Commissioner in the United Provinces of Agra and Oudh in succession to Major J. C. Robinson, appointed Sanitary Commissioner with the Government of India. Major J. D. Megaw has been appointed a Civil Surgeon of the Second Class. The services of Major J. C. H. Leicester have been placed at the disposal of the Government of Bihar and Orissa.

Captain E. J. C. McDonald, supernumerary medical officer at Dibrugarh, has been appointed to hold charge of the Lakimpur Military Police Outpost at Rotung. Captain W. E. Brierly, medical officer of the 17th Light Cavalry at Bareilly, has been appointed to hold civil medical charge of the Bareilly District in addition to his military duties. Captain T. W. Harley, Madras Presidency, has been granted an extension of his leave of absence. The services of Captain C. H. Fielding have been placed temporarily at the disposal of the Government of Burma for employment in the Jail Department. Captain L. J. M. Deas has taken up duty as Agency Surgeon at Bhopawar. Captain F. C. Fraser has been granted eight months' leave of absence home from India. Captain W. S. McGillivray, medical officer of the 41st Regiment of Dogras, has been appointed to officiate as Cantonment Magistrate at Cawnpore in addition to his military duties during the absence on leave of Captain E. G. S. Trotter. Captain J. F. Boyd has been appointed Specialist in the Prevention of Disease to the Dera Ismail Khan Brigade, and placed in charge of the Bacteriological Research Laboratory. Captain H. Halliday has relinquished charge of the duties of Superintendent of the Lyallpur District Jail. Captain W. S. Hamilton, Bengal Presidency, has arrived home on leave of absence from India. Captain A. M. Jukes has taken up duty as Officiating Deputy Sanitary Commissioner in Bengal Presidency. Captain C. Buckley has been posted to the United Provinces of Agra and Oudh for temporary duty. Captain E. C. Hepper, civil surgeon of Bahraich, has been granted one month's leave of absence.

THE YARROW CONVALESCENT HOME.—This institution, which was founded in 1895, held its annual "Founder's Day" celebration on July 20th. After luncheon the visitors were conducted over the home, which has accommodation for 50 boys and 50 girls. Standing in 12 acres of grounds at Broadstairs, the home was established solely for the benefit of invalid children requiring convalescent treatment after illness, only the children of parents of the professional and educated middle class of very slender means—a class for whom there is but very little provision in the way of beneficent institutions—being eligible for admission. The age limit is 4 to 12 years for boys, and 4 to 14 years for girls, but in cases where a certain amount of medical or surgical treatment is still required the age limit is extended two years for both sexes. A nominal sum of 5s. a week is charged. Full particulars are obtainable from the Secretary, at 6, Holborn-viaduct, E.C.

Correspondence.

"Audi alteram partem."

FLEMING'S (HECHT'S) MODIFICATION AND THE WASSERMANN TEST.

To the Editor of THE LANCET.

SIR,—Dr. Fildes' letter in your last issue convinces me that my criticism of Mr. Donald's findings was not strong enough. I had presumed that Mr. Donald had, in at least one series of experiments, used the same antigen that was used in the original Wasserman reaction, but it appears that in all cases different antigens were employed in the two methods which, in my opinion, renders Mr. Donald's paper, as a comparison of the two methods, quite valueless.

It seems that it was deemed essential in the modification to use guinea-pig's heart as the source of the antigen, but so far as I can remember I have never particularised any animal as the one from which I made my extract, for the reason that I did not regard it as essential. I have made very satisfactory antigens from human heart and from the heart muscle of rabbits, guinea-pigs, and sheep, but at the same time not every antigen made from any one of these is satisfactory, and it is not to be assumed that two antigens made at different times from, for instance, human heart are going to be equally useful. I have always, however, been careful to accurately standardise and test each fresh antigen, and I would like to support the remarks which Dr. Emery made on this subject in his letter last week. This part of the procedure I, like Dr. Emery, regard as of the very utmost importance. Like Dr. Fildes and others who have worked with it, I have found that Sachs's antigen is an improvement on the simple heart extract.

Dr. Fildes makes a defence of the criticism of my figures which appears in his book. He apparently attaches some importance to his statement that as "there was a very general opinion that the modification gave positive results in cases other than syphilis," and that as many criticisms had been levelled against the method, I ought to have gone much more into detail in the paper from which he quotes regarding those cases which were not supposed to be syphilitic but which gave positive reactions. In the first place, I did not know of this very general opinion, and from a perusal of the correspondence which Mr. Donald's paper has evoked it would appear that so far from being general it is not even general in the London Hospital. Secondly, my paper from which Dr. Fildes quotes appeared in 1909, when the method was little known, so that the criticisms of which he speaks seem to be of a date subsequent to the appearance of the paper.

Now that these cases are in dispute, however, I would like, Sir, if you will allow me to trespass on your space to enter into more detail with regard to them. Of the 10 such cases I will not discuss the two of leprosy and three of gonococcal infections in which Dr. Fildes allows the possibility of a positive reaction being found without the method being at fault. Of the other five one man with furunculosis did not return to the hospital and I have been unable to trace him. His blood was taken for another purpose, but as my custom in those days (when I was testing the value of the method) was to test every blood sample which came into the laboratory, I tested him, finding him positive. No questions regarding syphilis had been asked when the blood was taken, and as he could not be traced no evidence could be obtained as to whether or not he had syphilis. Had he returned to hospital I think it is exceedingly likely that his history would have enabled me to transfer him from the list of "supposed non-syphilitics." The paucity of the details here makes it impossible to use the case as evidence either way. This leaves four cases. Three of these, two of which had been originally diagnosed as tuberculous, have, as I stated in my letter in THE LANCET of July 13th, been apparently cured by salvarsan. Dr. Fildes states that this is discounted by the fact that syphilitic lesions may be cured by injections of salt solution. Dr. Fildes's statement is, of course, no argument. Had he shown that a tuberculous lesion would get well with injections of either salt solution or salvarsan then his observation might have carried some

weight, but as it stands it is merely an interesting fact having no bearing on the matter in dispute. This is, however, not the only clinical evidence that these cases were syphilitic. One was a girl about 13 who had ulceration of the thigh which did not respond to tuberculin treatment, although this was carried on for many months. I tested her many times both before and after the publication of my paper and she always gave a strong positive reaction to syphilis. Her mother and brother also I have tested and both were positive. The other two cases also I tested repeatedly, always with a positive result, and subsequently both cases developed lesions which satisfied the physician in charge that they were gummata and which disappeared after energetic anti-syphilitic treatment. The only remaining case was one of leukæmia. He had been a soldier. I could obtain no history of syphilis from him and I did not have the opportunity of testing his blood again as he left the hospital and died soon afterwards outside. This last case appears to me to be the only doubtful one, but in view of the fact that the patient had been a soldier, and of the well-known difficulty of obtaining a history in some cases, I do not think any serious criticism of my results could rest on this one case.

Dr. Fildes apparently has some objection to the manner in which the criticisms of the modification have been answered, and he makes the astonishing statement that his doubt as to the accuracy of the modification is based on this. I do not know what he considers a desirable way of criticising such a paper as Mr. Donald's. This observer makes two very definite affirmations: that a very large proportion of human sera (25 per cent.) do not possess sufficient hæmolytic power towards sheep's corpuscles for the test to be carried out in its simplest form, and that a positive reaction was not infrequently obtained in cases other than syphilis. The first statement has been shown by many of your subsequent correspondents to be a gross exaggeration of the true state of affairs, while the second has been met with a simple denial. Several correspondents have thrown out suggestions as to minor details of the method which might possibly have influenced Mr. Donald's results, but, of course, it is quite beyond the power of anyone to explain the completeness of his failure.

Perhaps we ought to have fashioned our criticism on the plan of Mr. Donald in his reply to Dr. Panton's letter. He assured him that "no criticism of, or even reference to, his modification was ever implied" in his (Mr. Donald's) paper, and yet Dr. Panton tells me that the only changes he has made in the method which I have described are in trifling and unessential details.

I am, Sir, yours faithfully,

St. Mary's Hospital, July 22nd, 1912. ALEXANDER FLEMING.

To the Editor of THE LANCET.

SIR,—The somewhat lengthy correspondence under the above heading in THE LANCET of July 13th demands that, in considering the several topics referring to my article, I shall reply to the several gentlemen to some extent collectively on each topic in turn. Also, the holding over of this letter through my lateness in returning the corrected proof allows me now to insert a few lines in reply to the only part of Dr. d'Este Emery's letter referring to my article that appeared under the above heading.

First, as regards the sera deficient in hæmolytic substances. In my old notes of the latter of Fleet-Surgeon Bassett-Smith's articles, referred to by Mr. Fleming and by Dr. Braxton Hicks,[1] I find that of 1100 sera about six hours old "in many hæmolysis was only sufficient to compare with the control tubes," and "10 per cent. failed to hæmolyse at all; these were not recorded for the specific test." This practically accords with my findings, considering that of the 186 sera tested by me "only a few were," as I said in my article, "between one and two days old, and nearly all were used within the first 24 hours."

In using the sera thus fresh I was acting by no means unfavourably to the method. Mr. Fleming, in his original paper,[2] in which he reports on 700 sera, says: "I have repeatedly performed the test, using sera which had been kept a week both in the ice-chest and at room-temperature, and find the value of the test is in no way diminished even after this interval." And in Fleming and Clemenger's paper,[3] reporting 950 cases, it is stated that "the hæmolytic power of human serum for sheep's corpuscles does not deteriorate for several days—even ten days." In these two papers there is absolutely no word of warning that such tests were in any way not to be relied on for diagnosis. Now Mr. Fleming tells us in his letter,[4] referring to this very topic: "I have never for diagnosis, however, relied on a test of a week-old serum done in the usual way." That "usual way" is the method described in detail in the two papers just referred to under footnotes 2 and 3.

As to my hæmolysis percentages, I found that just as, in fairness to the test, I had to admit to the test only sera fresher than two days, so also of them I had in fairness to refuse to regard as satisfactory some 27 per cent. of Series A. Series B was not much better. If I had been following the plan of using no serum older than six hours, I should, I dare say, have got much fewer deficient hæmolyses than I got. But I was following, considerately, Mr. Fleming's directions.

But sundry precautions to ensure hæmolysis are each in turn confidently recommended by your correspondents. Dr. Panton in his published (1910) directions directs washing the sheep's blood three (or does he mean perhaps four?) times, and in his letter, four or five times.[5] Dr. Athole Ross finds it necessary to wash the corpuscles "in a large bulk of saline at least eight times." Mr. Fleming, on the other hand, simply says that "the corpuscles are washed free from serum by repeated dilution with normal saline and centrifugalisation," and he gets "excellent results" by using in the test "a fresh salt solution" in place of a salt solution that has become faulty.

Dr. d'Este Emery has a couple of alternative theories to add to those just recounted. He says in his letter[6]: "I suspect that Mr. Donald used a much stronger antigen than Mr. Fleming is in the habit of doing, or a larger amount of corpuscles in the test." Such suspicion would seem rather ungenerous if Dr. d'Este Emery had spared time from the subject of his letter to even glance over my article. There it is plainly stated in paragraph 6: "The reagents and the technique were carefully conformed to the directions given by Fleming and by Fleming and Clemenger." This statement is actually repeated at the beginning of the summary. Then in paragraph 7 is mentioned the special care and trouble taken to test each serum in three or four extra tubes with graded proportions of antigen. Also it is stated in paragraph 10 that any batch of tests in which the known (i.e., previously properly tested) normal serum and the known (i.e., previously properly tested) syphilitic serum did not act satisfactorily with the antigen used, was not included in the results and the antigen was discarded.

The many failures to hæmolyse satisfactorily the controls were, of course, probably due to deficiency of one or of both hæmolytic substances—deficiency either initial or else acquired through changes in the labile complement after nearly two days' keeping of a minority of the sera. And as regards some of the partial hæmolyses—as was said in paragraph 20—"possibly six years' instead of six months' experience of the peculiarities of the modification might have brought more skill or more boldness in interpreting the often indefinite results."

Hecht's experience of 317 cases done by the very method to which he gave his name did not lead him, when he was defending and safeguarding that method,[7] to warn specially against any of such alleged causes of the faulty hæmolyses as are mentioned by my five critics. But he does warn, wisely, against the lability of the hæmolytic system. As regards the preparation of his 2 per cent. sheep's blood suspension his directions are, simply[8]: "Measure off 1 c.c. whipped sheep's blood, wash with physiological salt solution, and make up to 50 c.c."

The salt solution used in the test by me was well proved by plentiful controls. The 1 c.c. or so of sheep's blood required was, as I said in my reply to Dr. Panton's letter,

[1] Brit. Med. Jour., Nov. 5th, 1910. P. W. Bassett-Smith: Cf. Brit. Med. Jour., August 14th, 1909, p. 377.

[2] A Fleming: A Simple Method of Serum Diagnosis of Syphilis, THE LANCET, May 29th, 1909.

[3] Fleming and Clemenger: Medical Record, N.Y., 1910, p. 187.

[4] A Fleming: THE LANCET, 1912, vol. ii., p. 115, top of column 2.

[5] P. N. Panton: THE LANCET, 1912, vol. ii., p. 48, col. 1.

[6] THE LANCET, July 20th, 1912, p. 183.

[7] Zeitschrift für Immunitätsforschung, Originale, Band v. (1910), p. 572.

[8] Ibid., p. 578.

"thoroughly washed in copious changes of saline" in our large (30 c.c.) centrifuge tubes.

My reason for using guinea-pig heart extract is stated in THE LANCET of July 13th in my reply to Dr. Panton and at the beginning of the bibliographic note of my article. That antigen is part of the Fleming (Hecht) method, which, as a whole, as published, I was comparing, by its results and its non-results, first with one Wassermann method, as a whole, as published, used in this laboratory; and, second, in a separate series of cases, with a slightly, but importantly, different Wassermann method, as a whole, more recently used in this laboratory, and recently described.[9]

Series A was done separately from Series B, at an earlier time and on other sera, as I plainly stated in my article. The comparison in Series B is very interesting to me, and, no doubt, to readers of THE LANCET generally.

Whatever useful results may be obtained from the Fleming (Hecht) modification—and I have in no way criticised the results obtained by Mr. Fleming and by other users of the method—there is the fact that the test is applicable to only a small minority of the sera such as are in practice submitted to a busy laboratory. Dr. Panton, Dr. Athole Ross, and Dr. Braxton Hicks—as inferred from his approving reference to Fleet-Surgeon Bassett-Smith's article—all wisely restrict the tests to sera not more than a few hours old.

Dr. Panton and Mr. Fleming both make most interesting mention of dealing with non-hæmolytic sera by *heating* them before adding human serum containing amboceptor as well as complement. This heating is, admittedly, so far, a great improvement. But the reaction with the heated (inactivated) serum is practically a different reaction from that obtained with non-heated (active) serum. And it deserves a hæmolytic system quantitatively examined before each batch of tests. Probably also Dr. Athole Ross and Dr. Braxton Hicks heat non-hæmolytic sera before proceeding with them.

Mr. Fleming in his first paper says: "The method I have described above has great advantages which put it within the reach of every practitioner ..... with an elementary knowledge of laboratory method." In my article there is a plea for the performance of so important and often so difficult a test by the best skill and the best technique available. Dr. Athole Ross quite agrees with me that only laboratory workers of experience ought to be trusted with the performance of the test.

In my article is quoted Neisser's recent utterance as supporting my plea that, when a method involving the use of active sera is used, the findings of that method ought to be controlled by the Wassermann test. Dr. Braxton Hicks agrees with this, not only in theory but also in practice. But Mr. Fleming seems to dissent strongly from it. However, I would venture to add a warning, that if the modification reviewed by me be used, the readings of its tubes be taken and recorded before the tubes of the Wassermann test be looked at. Otherwise the frequently equivocal results are too apt to be found to agree with the Wassermann results!

In conclusion, Sir, I would thank your several correspondents for their frank criticism of, principally, the method to which I considered myself bound in carrying out my investigation of its value. It is interesting to find that their practice, quite as much as their pronouncement, on many points supports my findings. I may add, for the information of Mr. Fleming, that though I owe much to Dr. McIntosh, and not less to Dr. Fildes, for facilities in carrying out the investigation for my then prospective needs, yet for every part of the testing of the modification and for all the results of that testing I alone am responsible.

I am, Sir, yours faithfully,

Bacteriological Laboratory, London Hospital Medical College, E., July 20th, 1912, R. DONALD.

[9] H. Sachs: Berliner Klinische Wochenschrift, 1911, p. 2066. McIntosh and Fildes: Zeitschrift für Chemotherapie, Original, 1912, No. 1, p. 79.

A CORRECTION.

To the Editor of THE LANCET.

SIR,—In a letter in THE LANCET of June 8th on "Is Starch a Suitable Food for Infants?" I regret that I referred to *the late* Dr. Jacobi. This distinguished American physician is, I am delighted to learn, not only living, but in spite of his advanced age is mentally vigorous, so much so that he occupies the position of President of the American Medical Association. I must apologise to you for my error and to Dr. Jacobi for prematurely relegating him to a happier land than the one of which he is such a great ornament.

I am, Sir, yours faithfully,

Park-street, W., July 23rd, 1912. EDMUND CAUTLEY.

THE OPHTHALMOLOGY OF GENERAL PRACTICE.

To the Editor of THE LANCET.

SIR,—In the letter which appears in THE LANCET of July 13th Dr. A. Brown has mistaken my meaning. If he will read carefully again the *whole* paragraph, part of which he quotes, he will find that the "approximate" estimation of an error of refraction refers there to a question of diagnosis and not treatment.

In many cases of bad vision in one eye only, partially or solely due to refractive error, the prescribing of glasses is often not advisable, even though the sight can be improved, owing to the presence of an impossible amount of anisometropia or some disease complicating the error of refraction; and therefore an accurate retinoscopy is unnecessary. The importance of accurate work in every detail, as a means of treatment for visual defects due to refractive errors alone, where glasses can reasonably be ordered, has been insisted on in the preceding paragraph. I presume the fee to be charged would be the same as that for any other professional visit, where a diagnosis is made and advice given. The sentence "besieged with patients" is a somewhat exaggerated phrase to apply to my view of the effect of good refraction work on ophthalmic practice, and in any case this is an unlikely occurrence in a suburban practice for obvious reasons.

As will be noticed at the commencement of my paper, my remarks are primarily addressed to busy general practitioners who are obliged to combine eye work with their ordinary medical and surgical practice, and in no way refer to those medical men who wish to supplement their income by undertaking refraction cases.

If Dr. Brown finds that an adequate fee is obtainable commensurate with all the trouble he takes and the pleasure such work affords him, he is perfectly justified in continuing the practice of prescribing glasses; but I can assure him that I have sufficient evidence from general practitioners, including my own personal experience, for holding a contrary view. I am well aware of the ground on which I am treading, but if the subject be approached in the sense clearly indicated in my paper I do not think it is quite so "delicate" as Dr. Brown imagines.

I am, Sir, yours faithfully,

Harley-street, W., July 19th, 1912. MALCOLM L. HEPBURN.

MEDICAL PRACTICE IN INDIA.

To the Editor of THE LANCET.

SIR,—I beg to point out the following error in your leading article on Medical Practice in India published in THE LANCET of July 6th.

In referring to the military service it is stated that in neither of the branches (i.e., military assistant surgeon and military sub-assistant surgeon divisions) is there any qualification to practise independently. Now this is an error, which it is only fair to the hundreds of medical men holding licences in medicine, surgery, and midwifery, which they have obtained from Government sources in India, should be rectified in your next issue. I would feel very grateful if you could spare me a small space in your valuable journal for the following *résumé* of what the military assistant surgeon's diploma is.

The course of medical study for this diploma extends over a period of four years. On completing the classes and passing all the examinations the successful candidates are granted a licence by the Indian Government entitling them to practise medicine, surgery, and midwifery. On referring to the last report of the proceedings of the General Medical Council it will be seen that this body considers the military assistant surgeon's curriculum a good one. On passing the Final Examination and obtaining the licence, those of the

successful candidates who are physically fit are admitted into Government service, where they have to serve for a minimum period of three years. On completion of this term of three years with the British army in India they may resign if they wish to. Military assistant surgeons receive their medical training at either one of the following recognised medical colleges: the Medical College of Bengal, Calcutta; the Grant Medical College, Bombay; and the Madras Medical College, Madras. As regards the military sub-assistant surgeons (formerly known as hospital assistants), I do not know much about them, and I leave it for someone else to explain. Thanking you for the courtesy of an insertion in your valuable journal,

I am, Sir, yours faithfully,

July 19th, 1912. DIP. MED. COLL. CALCUTTA.

*** The statement with regard to the attitude of the General Medical Council is not quite accurate (see THE LANCET, June 15th, 1912, pp. 1629–30). The permission to resign after three years' service is in accordance with a recent regulation which we admit with regret had escaped our attention. Our correspondent says nothing of the limitations surrounding that permission.—ED. L.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Anti-tuberculosis Exhibition.

THIS exhibition, which was held in the Town Hall from July 3rd to 17th, has been a very great success, having been attended by nearly 30,000 people. The exhibits, which had many interesting local features, occupied the whole of the ground floor and basement of the large hall. Visits were paid by school children in the morning, and in the afternoon and evening many willing helpers demonstrated the exhibits to the crowds of visitors. The exhibition was opened by the Lord Mayor in the presence of a large gathering of medical men, city councillors, and social workers, and the medical officer of health, Dr. J. Robertson, gave the opening lecture on the evening of July 3rd in the medical theatre of the University. Lectures were given on the following evenings by Dr. G. A. Auden, Mr. A. Stanley, Dr. H. W. Pooler, Dr. J. R. Ratcliffe, Mr. G. B. Dixon, Dr. L. G. Parsons, Dr. A. D. Heath, Dr. J. G. Emmanuel, and Dr. W. B. Knobel. The lecture hall was crowded so that hundreds of people were turned away most evenings. The concluding lecture was given by Dr. W. H. Wynn, the visiting physician to the municipal sanatorium, to over 2000 people in the town hall itself. At this meeting the chairman of the health committee, Alderman Fletcher, presided and summed up the lessons of the exhibition. On July 7th addresses were given in 60 brotherhoods, and mixed meetings in the churches and chapels of the district, and the subject of consumption was discussed in most of the adult schools of the midlands. This "Anticonsumption Sunday" greatly helped the success of the exhibition and formed a precedent which it is hoped will be followed in future years.

The University.

Professor Edward Malins has tendered his resignation of the chair of midwifery in the University of Birmingham, to which he was appointed in 1894, in the days of Mason College. In his letter of resignation Professor Malins expresses his grateful appreciation of the consideration he had always received both from the authorities and from his colleagues. Acknowledging the privileges of citizenship and recognising its duties and obligations he at the same time sent a cheque for £1000 as a contribution towards the general expenses of the university with "a profound sense of the many important advantages it offers to the advancement of knowledge and the great capabilities it opens to the future in the highest interests of intellectual and material progress in our midst."

Warwickshire School Children.

In his third annual report of the procedures in connexion with the medical inspection of school children Dr. Bostock Hill says that a good deal of work has been done in improving the ventilation of schools and that the majority can now be said to be capable of fair ventilation. He suggests that ventilation drill should be established in every school, and that scholars for certain days should be appointed for each room to see that ventilation is well maintained, and particularly that all doors and windows are left open, so that the school can be flushed with air between the sessions. The condition of the teeth is still a matter of deep concern. In no less than 4894 cases were there carious teeth discovered in the mouths of children, and in 494 cases over seven teeth were found defective, and in 1706 additional cases the numbers varied from four to seven. Taking the standard used in previous years of the 7452 children examined, the percentage of those affected among the boys was 22·6, and among the girls 23·1. These figures closely approximated to those of the previous year, when the numbers affected with four or more carious teeth were—boys 24·34, and girls 24·5. As regards vision 109 cases of squint and 374 cases of defective vision were observed. Of these 96 were found already wearing glasses, and in 15 instances these glasses required correction. In addition 114 cases of external eye disease were discovered, and 15 cases of other and rarer eye defects.

July 23rd.

SHEFFIELD.

(FROM OUR OWN CORRESPONDENT.)

Pathological Department of the University.

THERE has been an unusually large number of changes amongst the medical staffs of the various local institutions during the past few weeks. The pathological department of the University is losing its Joseph Hunter professor of pathology, Dr. J. M. Beattie, who has been elected to the chair of bacteriology in the University of Liverpool. Professor Beattie came to Sheffield in 1907, and during his five years' tenure of the chair of pathology has occupied an important place in the medical life of the University and of the city. He has not only himself carried out a very large amount of research work in various subjects, but he has encouraged and stimulated others to undertake similar work in his laboratory. As honorary pathologist to the Royal Infirmary and Royal Hospital he has rendered valuable services to the staffs of those institutions, which have been greatly appreciated. Thanks largely to his initiative, the Pathological Section of the Medico-Chirurgical Society has been set going and has proved a steadily increasing success. In addition to his professorial duties Professor Beattie has acted as Dean of the Faculty of Medicine for over four years, and in that capacity has proved a source of strength to the faculty, the loss of which will be greatly felt. Professor Beattie carries with him to his new post the thanks and good wishes of a large circle of friends.

Royal Infirmary.

After 27 years' service Dr. W. Dyson, senior physician to the Royal Infirmary, has resigned his post on the acting staff. For many years Dr. Dyson's name has been a "household word" as a consulting physician in the city and for miles around, and his valued advice and wide clinical experience have been in constant demand by his colleagues. Previous to joining the staff of the infirmary he had been physician to the Royal Hospital for ten years, and on his resignation was made consulting physician to that institution. Dr. Dyson holds the post of emeritus professor of medicine in the University. He is succeeded as senior physician at the Royal Infirmary by Dr. William S. Porter.

Royal Hospital.

Death has deprived the Royal Hospital of two members of the staff, both comparatively young men from whom many years of active work were in the ordinary course of events to be expected. Mr. H. Lockwood, senior surgeon, passed away suddenly on July 19th after an illness of only a few hours. His connexion with the hospital had extended over a long period, he having been resident house surgeon from 1883 to 1887, and honorary surgeon from 1893 up to the time of his death. He is succeeded as senior surgeon by Mr. Graham S. Simpson.—The dental staff has suffered a severe loss by the untimely death of Mr. Frank Harrison, its senior dental surgeon and the founder of the dental department. An enthusiast in his work, Mr. Harrison was well known in

his profession both for his skill and for his stimulating personality. With Mr. R. D. Pedley he was the author of an excellent treatise on the care of the teeth.—Mr. F. A. Hadley, assistant surgeon, has resigned his post, as he is shortly leaving to take up work in Australia. Mr. Hadley has been actively connected with the Royal Army Medical Corps (T.F.), of which he is locally in command. He saw active service in South Africa.

Tuberculin Treatment.

Sheffield may congratulate itself on having been a pioneer in tuberculosis prevention, as it was the first city in the kingdom to obtain compulsory notification of consumption. In 1903 Dr. John Robertson, who was then medical officer of health, and who now holds a similar post at Birmingham, persuaded his committee to obtain powers from Parliament for this purpose. These powers were only granted with considerable reluctance and some misgiving as to their practicability, but, thanks to Dr. Robertson and his successor, Dr. H. Scurfield, and their staffs, the arrangement has worked from the beginning without hitch or difficulty, and, as is well known, other places followed suit. More recently, thanks to the private generosity of Mr. Douglas Vickers, of Vickers Maxim, Limited, the city received a sum of £2000 to carry on tuberculin treatment under the health committee's control. The city was able to obtain the services of Mr. John E. Chapman, at that time medical superintendent of Ochil Hills Sanatorium and under his supervision the arrangements for tuberculin treatment have been got into working order and promise well for the future, but Mr. Chapman now leaves Sheffield to become a medical inspector under the Local Government Board.

Edgar Allen Institute.

This institute for medico-mechanical treatment by means of the Zander methods has now been in full work for one year, and there is no doubt it has proved a great boon to the citizens. The smooth manner in which it has worked, and the extensive support it has already received from the medical profession, are partly due to the sound principles upon which its management has been based, and largely also to the tact and skill with which its medical director, Dr. R. G. Abercrombie, has carried on his duties. When the generous scheme was first announced by Mr. Edgar Allen it was received with some coldness, almost amounting to hostility, by the medical profession generally. This may have been due partly to ignorance of its exact objects and partly to insular prejudice. That, however, is now a thing of the past, and let us hope forgotten. The institute as run on the present lines is doing useful work and is proving a valuable addition to the therapeutic possessions of the city. Unfortunately, it shows as yet no signs of being able to support itself after the three years for which Mr. Allen has made himself responsible for its maintenance. The actual takings in money from paying patients this year are rather less than the cost of upkeep of one quarter, the bulk of the 550 patients attending during the year being of the hospital class. It is hoped that insurance companies, sick societies, yard clubs, &c., together with private citizens, may see their way to assist in providing funds for its maintenance.

July 23rd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The National Insurance Act and the Profession in Edinburgh.

ON July 20th, when the result of the vote at the Representative Meeting of the British Medical Association in Liverpool became known, there was expressed over the telephone wires in Edinburgh a great feeling of relief and of deep satisfaction that the Representatives had, by so large a majority, decided to cease parleying with the Chancellor of the Exchequer. The profession in Edinburgh is also much pleased with the manner in which the honorary staff of the Edinburgh Royal Infirmary brought the question of the relations between the infirmary and insured persons and between the honorary staff and the profession generally before the managers. The statement published by you last week was the basis of an interview between a committee of the staff and a committee of the board of managers, and was then submitted to the whole board. The answer given by the board, also published last week, has been much appreciated not only by the staff, but by the whole profession in Edinburgh and Leith. Some weeks ago there was a little excitement over the supplementary pledge because of the extraordinary wording of the last paragraph, but after some discussion a new form of words, which really expressed what was intended, was accepted and signed practically by the whole staff. The profession in Scotland are now in a position to settle down steadily to the solving of the problems in front of them, for which, fortunately, five months are still available.

Aberdeen Medical Men and the National Insurance Act.

Two meetings of the Aberdeen division of the British Medical Association have been held recently. At the former the recent appointments of medical men by the Scottish Insurance Commissioners were under consideration, and motions were put to the meeting and carried unanimously, confirming the action of the State Sickness Insurance Committee and condemning the conduct of those who have accepted positions under the Act. The second meeting was held on July 16th, and was largely attended and representative. It was decided unanimously that the representatives of the division to the Representative Meeting in Liverpool be instructed to support a resolution advocating that negotiations be now broken off, in view of what it regards as the policy of procrastination deliberately adopted by the Chancellor of the Exchequer.

Medical Opposition to the Insurance Act in Elgin and Nairn.

At a meeting of the medical men in the Banff, Elgin, and Nairn division, held in Elgin last week, it was unanimously agreed to instruct the division's representative to support recommendation No. 2 of the Central Council, but with the additional proviso that if terms are not arranged between the British Medical Association and the Commissioners by Oct. 15th, negotiations be then broken off. The honorary secretary read a minute of a meeting of the provisional Medical Committee for Elgin and Nairn, held at an earlier hour the same day, by which it was unanimously resolved not to approve any medical man in this area accepting a post on the Provisional Insurance Committee of Elgin and Nairn until terms are arranged between the British Medical Association and the Insurance Commissioners. The division meeting approved this resolution. It was further intimated that all the Banffshire medical men who had been approached with a view to service on the Banffshire Insurance Committee had declined office.

Report of the Medical Officer of Health of Edinburgh.

Dr. Maxwell Williamson, in his annual report for 1911, draws special notice to the falling birth-rate of the city, the rate for the year under consideration having been 21·2 per 1000 of the population. The rate of infantile mortality was 115 per 1000 births, as against 103 in 1910, and 113, the average for the previous five years.

Graduation Ceremonial at Edinburgh University.

On July 12th, at the summer medical graduation ceremonial of Edinburgh University, the honorary degree of Doctor of Laws was conferred on Professor H. B. Allen, M.D., University of Melbourne, and on Professor R. Ramsay Wright, M.A., B.Sc., University of Toronto. Forty-five candidates obtained the degree of Doctor of Medicine, and the following obtained a gold medal for the thesis: Thomas Graham Brown, M.B., Ch.B., for a thesis on Rhythmic Movements—a Contribution to the Physiology of the Central Nervous System; John K. M. Dickie, M.B., Ch.B., for Studies on the Development of the Upper Air Passages; John Fraser, M.B., Ch.M., for an Etiological and Pathological Study of Tuberculosis of the Bones and Joints; Thomas Grainger Stewart, M.B., Ch.B., for a thesis on Compression Paraplegia. The address to the graduates was delivered by Professor Alexis Thomson, the promoter, who gave the new graduates some wholesome advice for their guidance in the future. Touching on the Insurance Act, he remarked that though the supreme importance of the national health was recognised there was no Ministry or department of health that could advise the Government in framing legislation, and that hence it came about that measures of which the principle was unimpeachable, such as the National Insurance Act, contained provisions

detrimental to the moral and material interests of the profession, and indirectly thereby to the public.

A Scottish Joint Hospital Board and its Medical Superintendent.

In THE LANCET of April 13th, p. 1005, comment was made under the above heading upon the action of the Renfrew and Clydebank Joint Hospital Board in dismissing Dr. William Butchart from his post of medical superintendent of the board's hospital at Blanarthill. Your readers know how pressure had been brought by the board to induce Dr. Butchart to adopt for the scarlet fever patients placed under his care what is known as the "Milne system," and how upon his refusing to do so they passed a resolution by a majority of one vote terminating his engagement. Apparently no such reconsideration as was recommended of the extraordinary step thus taken by the Renfrew and Clydebank joint hospital board has occurred, and presumably a successor to Dr. Butchart is now carrying out the "Milne system" at the institution referred to. I have great pleasure, however, in recording that a public presentation has recently been made to Dr. Butchart at Clydebank, in recognition of his services at the hospital for 15 years, and of the independence of character and self-sacrifice shown by him in connexion with his dismissal from his post. An influentially signed testimonial accompanying the presentation referred with great approval to Dr. Butchart's stand, made in the interests of the community and regardless of the personal loss entailed on himself. It assured him of the esteem of his signatories and of their faith in him in his professional capacity, which it declared to be based upon the high rate of recovery among the patients at the Renfrew and Clydebank Joint Hospital and the exceptionally low death-rate there under his superintendency. Little can be added to this or to former comments on the conduct of the Hospital Board which adopted the singular course of making an experiment in medicine upon its own responsibility upon the bodies of children and others committed to its care through the incidence of a dangerous infectious disease. The majority who, by a preponderance of one vote, adopted so inadvisable a policy, appear to have been greatly influenced by a promised saving of cost per patient which they now, no doubt, expect to realise. Dr. Butchart, in the modest and temperate speech in which he acknowledged the presentation made to him, denied the likelihood of even this taking place. His observations, however, will have called the attention of his supporters at Clydebank to even more important statistical points for their future scrutiny; they will watch to see whether figures show an increase or a diminution in the spread of disease.

St. Andrews University Graduation Ceremony.

The annual graduation ceremony at St. Andrews University took place on July 17th, at which Principal Sir James Donaldson, Vice-Chancellor of the University, presided. Sir Thomas Boor Crosby, Lord Mayor of London, and Sir John Batty Tuke were among those who received the honorary degree of LL.D. Addressing the honorary graduates, Principal Donaldson said that some of them in the course of their various vocations might come upon young men of remarkable ability, whose circumstances rendered it difficult for them to find their way to the university. He hoped they would recommend such young men to come to St. Andrews, and they of the University would take care that means would be provided for overcoming their financial difficulties and that encouragement would be given them to pursue their studies with vigour till they reached high positions in the teaching and other professions.

Instruction on Medical Inspection of School Children.

Dr. G. Rose, medical officer to the Aberdeen School Board, has indicated to the University Court his willingness to give students for the Diploma of Public Health some instruction on the medical inspection of school children, the sanction of the school board to his doing so having been obtained.

Kingseat Asylum, Aberdeen.

The average maintenance rate for all Scottish district asylums for 1911 was £27 7*s.* 7*d.* per patient. Kingseat Asylum was £26 12*s.* 3*d.* The Local Government Board report for 1911 contains the following paragraph:—"This statement shows that in the year 1910–11 the highest expenditure under the head of food was £12 5*s.* 4*d.* per patient and the lowest £9 4*s.* 1*d.* in Aberdeen Kingseat Asylum, which is £1 11*s.* 4*d.* below the average of all district asylums."

July 23rd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The National Insurance Act.

A VERY largely attended meeting of the medical profession of the city of Belfast was held in the Medical Institute, on July 17th, to consider an important statement in the form of a letter, of which it was suggested that copies should be sent to the secretaries of the various Friendly Societies and to the new approved societies under the Insurance Act. This document, which had been previously carefully considered by the Belfast Local Medical Committee, was adopted, and the Local Medical Committee was instructed to issue it to all Friendly Societies and others concerned. It practically reiterates the demands of the profession, especially free choice of doctor, an income limit of £2 per week for those eligible for medical benefits, and a minimum rate of remuneration of 8*s.* 6*d.* per head per annum, exclusive of medicine and appliances. The names of members of the Local Medical Committee, with that of the convener, 61 medical men in all, are appended, and in addition the names of 216 medical practitioners (inclusive of the 61 referred to) who have signed the following understanding:—

I, the undersigned, hereby promise that I will not individually enter into any arrangements with an Insurance Committee or an approved society, or other person or persons, under the National Insurance Act, or under any system or society worked independently of the Act, that I will only act through the Local Medical Committee of the district in which I live and practise, and then only if the conditions are satisfactory to and in accordance with the declared policy of the I.M.A. and B.M.A.

Effect of the Insurance Act on Belfast Hospitals.

At a meeting of the board of management of the Royal Victoria Hospital, Belfast, held on July 17th, it was reported by the collectors that, as a result of the Insurance Act, subscribers and business firms were withdrawing their contributions.

The Women's National Health Association and the Sanatorium Benefit.

A grant of £145,000 was made to Ireland by the Treasury for providing accommodation for tuberculous patients in connexion with the sanatorium benefit of the Insurance Act. The only allotment from this sum as yet is one of £25,000 to the Women's National Health Association, which has offered to contract for the treatment of tuberculous patients with the various county councils and insurance committees, made prior to the formation of the insurance committees, and before the various local authorities could estimate the probable number of patients or the sums they would require. It is generally felt that some explanation is required of the diversion of such a sum in such circumstances.

Attack on a Sanatorium.

Since the announcement that the Women's National Health Association had obtained the house and demesne of Peamount, near Lucan, Co. Dublin, for a sanatorium, there has been much local opposition to the scheme, expressing itself chiefly in letters to the newspapers, and in resolutions of local bodies. But on Sunday afternoon some 50 men—with picks, crowbars, and ropes—gathered at Peamount and wrecked a pavilion in course of erection, in spite of the efforts of the foreman in charge to protect the buildings. The public hostility to the erection of sanatoriums is becoming a danger to public health work. It is impossible to avoid tracing the ignorance shown in the present case to the attitude adopted a few months ago in relation to the extension of the Royal Hospital for Incurables at Donnybrook.

Milk-supply of Dublin.

The Department of Agriculture having forbidden the movement of cattle from one pasture to another in consequence of the foot and mouth disease, many of the pastures have become bare, giving rise to a fear that the milk-supply of Dublin would fail. A deputation of cow-keepers, however, a few days ago obtained from the officers

of the department certain concessions as to the moving of cows.

Death of Surgeon-General S. B. Roe, C.B.

The death is recorded of Surgeon-General S. B. Roe, C.B., D.L., which occurred at his residence, Ballyannall House, Cavan, on July 16th, at an advanced age. Born in Cavan in 1830 he was educated at Portora Royal School, Enniskillen, and Trinity College, Dublin, where he graduated in arts and medicine. After qualifying he joined the 92nd Gordon Highlanders as assistant surgeon, and went with them to the Crimea. He then took part in the Indian Mutiny, and afterwards in the second Afghan campaign, 1879–80, and also in the Boer war of 1881. The Companionship of the Bath was conferred on him in 1881 for his lengthened services to the British army in the field. He was Principal Medical Officer in Madras in 1880, after which he retired from the army, with the rank of surgeon-general. In 1892 and 1893 he was High Sheriff for county Cavan. He was a well-known member of all the local public bodies in his own district, and took the keenest interest in the welfare of the Church of Ireland, often attending at the Diocesan Synod. A very kindly and charitable gentleman, he was most popular with all classes in county Cavan.

Death of Dr. David Baldwin Jacob.

The death, in his seventy-seventh year, of Dr. David Baldwin Jacob occurred recently at his residence, Port Leix, Maryborough. He took his M.D. in the old Queen's University in 1856, and became a Fellow of the Royal College of Surgeons in Ireland in 1872. He was an ex-President of the Irish Medical Association and a Fellow of the Royal Academy of Medicine in Ireland, and had held infirmary, prison, and asylum appointments. He had been a J.P. for the Queen's County since 1865. He retired from practice some years ago.

Death of Mr. R. J. Montgomery.

The death of Mr. Robert J. Montgomery, F.R.C.S. Irel., assistant surgeon to the Royal Victoria Eye and Ear Hospital, Dublin, and for many years secretary to the Board of Examiners of the Royal College of Surgeons in Ireland, occurred recently from acute pneumonia after a few days' illness.

July 23rd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Paris Hospitals.

THE discussion of July 9th at the Academy of Medicine, on the subject of the projected model hospital for Lyons was continued on July 16th by M. Gilbert Ballet, clinical professor of mental diseases. He expressed regret that no organic provision had been made in the hospital for the acutely delirious, those with obsessions, delirious melancholics, and intoxicated persons. The few rooms reserved, he said, were entirely insufficient. The utility of such services no longer needed demonstration. Among other advantages they serve to temper for those in a state of acute delirium the present rigors of the legislation regarding the insane. M. Mesureur, director of the Assistance Publique at Paris, defended the Paris hospitals. He said that M. Mosny, in his remarks on the new Hôtel-Dieu at Lyons, had shown himself hypercritical, notwithstanding his kindly words on the hospitals of Paris. If the city of Paris had in the past few years spent 29,000,000 francs in the construction of new hospitals, it had also spent 30,000,000 over the old ones. Of this sum many millions had been devoted to laundries and other works, to the quarters for the staff, and to repairs both internal and external. M. Mosny had cited the Institut Pasteur as one of the few objects of his admiration. M. Mesureur reminded him that the Institut Pasteur had a small hospital of only 100 beds, and it was unreasonable to demand that the 16,000 beds of the Paris hospitals should be maintained under the same conditions as regards luxury and isolation. Moreover, an experiment in hospitals on the pavilion plan had already been made in Paris at the Hôpital Boucicaut. The daily expense there in 1900 was 6·20 francs, while the mean of that in the general hospitals in Paris was 3·78 francs. At the last accounting, in 1910, the cost at the Boucicaut was 6·90 francs, while in the large hospitals it did not exceed 4·75 francs. This economic consideration could not be ignored. Finally, M. Mesureur reminded M. Mosny that in the new hospitals for children, the Bretonneau, the Hérold, the Trousseau, each child is isolated, and that 250 new beds are under construction at the Trousseau under like conditions. The cost will rise to 2,500,000 francs. In the maternities, also, M. Mesureur pointed out, a death rarely occurs although two-thirds of the women of Paris are delivered there.

Ogston's Operation in the Treatment of Tarsalgia.

At the Société de Chirurgie, on July 10th, M. Kirmisson upheld the efficacy of Ogston's operation which he was the first to introduce into France. This operation, if properly performed, allows of a perfect reconstruction of the plantar arch, while retaining the suppleness of the foot, provided only that pains have been taken to ensure and maintain a perfect coaptation of the bony surfaces. M. Broca confirmed absolutely M. Kirmisson's statement.

The Surgeon as an Operator on Himself.

The press recently published an account of an operation for hernia performed on himself by Dr. Jules Regnault, médecin de la 1ere Classe de Marine, of Toulon, who has described the conditions under which he performed this feat. He used local anæsthesia by cocaine, a method which he has employed in upwards of 400 cases of hernia. Under certain conditions he combines adrenalin with the cocaine, with a preliminary injection of morphine. Dr. Regnault had with him two surgeons prepared to intervene if necessary. His operation he regarded as a scientific experiment on himself, from which he draws the practical conclusion that local anæsthesia by cocaine under certain conditions can replace general or spinal anæsthesia in a large number of operations, since it has enabled him to operate on himself without pain. In case of urgent necessity, with this method of anæsthesia an isolated surgeon can operate on himself painlessly, a matter of great importance for the ship's surgeon or the colonial medical officer, who may find himself alone on his vessel or in an isolated camp in the bush.

Transitory Meningeal Disturbances of Tuberculous Origin.

At the Société d'Études Scientifiques sur la Tuberculose, which meets every month, matters of all kinds relating to this disease are brought forward for discussion by scientific persons especially qualified in regard to them. At the June session M. Barbier stated that alongside the cases of tuberculous meningitis said to be cured, which are really quite rare, must be set a series of transitory meningeal disturbances which must be considered as having their origin in the same source. These meningeal accidents are characterised by vomitings, convulsions, and somnolence. They last for some days, are liable to recur, and are frequently encountered in the early history of children who later succumb to meningitis or to tuberculosis. They may present themselves under a monosymptomatic form, such as zona and certain neuralgic pains of radicular rather than neuritic type, which are observed especially in small children and which are difficult of interpretation unless their meningo-radicular origin be remembered. These meningeal episodes are seemingly due to congestive meningitis or to sero-fibrinous meningitis with limited effusion. Traces of them are found in children who have died later from meningitis or tuberculosis, under the form of sclerous thickenings at the base of the brain, which may have given rise to affections of the intellect, or headaches commonly attributed to "growing" or to migraine. The knowledge of these facts is of importance from a practical point of view, for these patients must be subjected to a general and cerebral hygiene in accordance with the suspected nature of the lesions. Seaside resorts and certain mineral waters are particularly unsuited to such subjects. In regard to this latter warning of M. Barbier, Mme. Girard-Mangin, directress of the Anti-tuberculous Dispensary of the Hôpital Beaujon, referred to three deaths from tuberculous meningitis during a course of stimulating treatment.

The Academy of Medicine.

At an election for two foreign corresponding members of the Academy of Medicine, held on July 16th, Sir William Ramsay, of London, and Dr. J. Reverdin, of Geneva, were elected.

Death of Professor Joannes Chatin.

The scientific world of France has sustained a severe loss

by the death of M. Joannes Chatin, Professor in the Faculty of Science, and Member of the Institute of France. As a Doctor of Science, a professeur *agrégé* of the Superior School of Pharmacy, and a Member of the Academy of Medicine, his loss will be felt in a considerable sphere of work. His work on the helminths, on bilharzia hæmatobia, on the ankylostomum, on coccidia, tænia, trichina, and other parasitic diseases was epoch-marking. He has published books on the animal cell, the organs of sensation in the animal series, and on the organs of nutrition and reproduction in vertebrata and invertebrata, which have secured for him well-merited distinction.

July 22nd.

CONSTANTINOPLE.

(FROM OUR OWN CORRESPONDENT.)

Preventive Measures against Cholera.

THE prefect of the city has issued a proclamation to the effect that all the necessary measures against a renewed outbreak of cholera have been taken. Regular instructions according to existing municipal laws and regulations have been formulated and sent to the municipal medical men and to the inspectors of the various districts and quarters. The hospitals have received the necessary supplies of drugs and disinfectants. Two ambulance automobiles have been ordered for the sanitary service. Two dispensaries will shortly be opened, one at Scutari and the other at Fatih, near Mohamed the Conqueror's mosque. All the utensils and apparatus necessary for disinfection are ready and 190 tents are available for cases requiring isolation. The sanitary service also has undertaken the building of a hospital with 100 beds at Duerah-Pasha, and also a pavilion for surgical cases capable of receiving 80 patients. These two establishments will be finished in a few months. The construction of a large hospital at Scutari, a quarter most adapted for sanitary purposes, is also contemplated. It will thus be seen that the municipality has no intention of neglecting its duty. Disinfection is being carried out in many quarters and strict supervision is exercised over public restaurants, coffee-houses, inns, &c. The cleaning of the streets is attended to with greater care.

Cholera in Aleppo.

From Aleppo it is learnt that in consequence of an outbreak of cholera the authorities have thought it necessary to prohibit the use of water from two suspected sources. Since many ignorant people rebelled against this order, causing serious disturbance, the police had to interfere. Not only in Aleppo, but in many other cities also, as well as in the metropolis itself, the sanitary authorities have to contend against the superstitious ignorance of the populace, who believe that nothing should be done to combat illness, for it is sent by Allah and must be borne patiently and submissively. Cholera also they believe to be God-sent, and its spread to be occasioned by the sacrilegious efforts for prevention and cure.

Municipal Dispensaries.

Some time ago the municipality asked the Civil Medical Council to establish dispensaries in those quarters of the metropolis that are too far distant from the municipal hospitals. Some days ago the first of these dispensaries was opened at Scutari. It has a small hospital with six beds attached to it. Patients are taken in only for a very limited period of time. When the case is a difficult one it is transferred to the nearest municipal hospital after receiving first aid. All poor patients must apply for admission to a hospital through these municipal dispensaries. Nurses and dispensers are on service day and night.

The Red Crescent v. *the Red Cross.*

A regrettable incident occurred recently in Stamboul. A sergeant stopped an ambulance automobile belonging to a Greek hospital and tore off the Red Cross, alleging orders from the higher authorities. The Œcumenical Patriarch entered a vigorous protest with the Minister of Justice. The Minister replied that the sergeant had done his duty rightly. The Red Crescent had been internationally recognised as the rightful emblem of all Ottoman hospitals and ambulance services, so that the Red Cross was entirely unnecessary on Turkish Territory. The incident has produced a painful impression, not only amongst the Greek elements of the population. The Holy Synod of the Patriarchate contemplates taking vigorous measures to obtain redress, in which it will have the support of all the Christians.

General Mehemed Ali Pasha on Medical Men and the Survival of the Unfit.

Mehemed Ali Pasha believes that the strength and health of the people in Albania are due to the absence of medical men. The doctors, he thinks, only help to impoverish the human race, physically and mentally. Medical treatment only results in the fact that persons of weak constitutions, who would in the natural course of events simply die out, are maintained alive in their useless existence and propagate a debilitated race. In this way whole generations of scrofulous, tuberculous, and syphilitic people succeed one another interminably, augmenting the general misery of human kind in a very great degree. Individuals with chronic diseases very often attain great longevity, thus becoming themselves perpetual sources of disease propagation and infection. In Albania, however, where there are neither doctors nor drugs, those born in any way defective at once succumb, and patients with any mortal disease necessarily die quickly and in a natural way. Consequently the law of natural selection prevails, and only the robust and well formed survive. Thus thinks the general who is braver than he is wise.

July 2nd.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

Bubonic Plague in Havana.

IN consequence of the prevalence of bubonic plague in South America and Porto Rico, and the news from Cuba that there are cases of that disease in Havana also, Surgeon-General Blue, of the United States Public Health and Marine Hospital Service, has directed the officials at Portland, Maine, Boston, Providence, New York, Perth Amboy, Baltimore, Norfolk, Wilmington, Charleston, Savannah, New Orleans, Pensacola, and Galveston to confer with the respective city health officers and urge the collection, examination, and destruction of rats, especially on the water fronts. Orders have been sent to Havana to commence thorough fumigation of all vessels bound for United States ports. Immediately after discharge of cargoes all rats will be destroyed and vessels prohibited from going to, or lying at, the docks in ports of the United States. So far back as June 23rd Dr. O'Connell, the medical officer of health of the Port of New York, issued an order concerning the passengers and crews of vessels arriving in New York from Porto Rico, Trinidad, and Venezuela, requiring a strict individual examination to be made of all persons on ships from West Indian and South American ports. Hides and animal skins of every kind will not be allowed to be taken from the ships until they have been fumigated.

The Panama Canal and South American Ports.

With the approaching completion of the Panama Canal, attention has been acutely drawn to the bad sanitary conditions existing in certain South American ports, of which, perhaps, Guayaquil, in the Republic of Ecuador, is the most notorious.[1] Yellow fever has been prevalent there for a considerable time, and little or nothing has been done by the local sanitary authorities in regard to it. Owing to its situation as regards the Panama Canal, Guayaquil would be a continual menace. The Government of Ecuador is said to have decided to take measures calculated to render Guayaquil healthy, and to have requested the United States to assign Colonel William Gorgas, sanitary officer of the Canal Zone, to make a survey of the port and to recommend a scheme for its sanitary regeneration. The request is being considered by the United States Government.

Yale Medical School.

President Hadley, of Yale University, in his annual report, just issued, states that a proposition, which it is hoped will shortly be put into effect, has been made by the Yale

[1] THE LANCET, March 23rd, 1912, p. 812.

Medical School to the New Haven Hospital that the medical school shall have the right to nominate the visiting medical staff of the hospital and to use the hospital for teaching purposes. In return, the University before July 1st, 1914, is to set aside a fund of £120,000, of which £20,000 are to be used for building a clinical and pathological laboratory in connexion with the hospital and £100,000 for its endowment.

Floating Hospital in New York.

The floating hospital of the Guild of St. John has commenced its summer trips and on July 11th 1600 mothers, children, and sick persons cruised through the Narrows to the Lower Bay. A large number of infants and children in a serious state of health and needing prolonged treatment were transferred with their mothers and other children of the family to the guild's seaside hospital to be kept until the infants have recovered or succumbed. The floating hospital sails on six days of the week.

Sex Hygiene to be Taught in New Jersey Schools.

The Board of Education of Orange, New Jersey, has unanimously decided, after much discussion, that girls of 14 years of age should receive instruction in sexual hygiene from competent teachers.

July 12th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

The Nationalisation of Hospitals.

IN New South Wales the Labour Government is divided on the question of State direction of charities. The Premier (Mr. McGowen) recently declared himself opposed to such a policy. The Chief Secretary is a strong advocate of the scheme, and the labour organisations intend making it a plank in their platform. In a recent address to the Sydney University Medical Students' Society the Chief Secretary asked why hospitals should be charitable institutions. The inherent defect in the system was that the very poor got the same treatment for nothing, as a matter of charity, and by the same medical men as the very rich; but the great middle class had no provision made for them. Practically, they had to pay the same as the rich, or receive treatment outside at reduced fees, or for nothing as a matter of charity. In the main, and more especially for minor ailments and for such people as are members of clubs or benefit societies, medical attention is given for a moderate remuneration. But as soon as the ailment becomes of a serious character the fees to be paid by those who are not privileged to belong to these clubs or to enter public hospitals—a large class in the community—develop very often into a severe burden. There is no hospital for these people except the private hospital, and yet the dividing line between the classes is a very narrow one. The only cure is for the State to undertake the conduct of the hospital system on the same basis as it provides for education, water and sewerage, railways and tramways, justice, and the many other public services of the community, as a matter of business and public convenience.

Venereal Prophylaxis.

Mr. Maurice Gregory, a visitor from England, who is interested in the Society for Suppression of Vice, has been met by a conference of clergy and others in the State Premier's room in Melbourne. The Premier, the Hon. W. A. Watt, said that the Government had decided to give, not only countenance, but whatever support it could to the campaign which the advisory committee had urged of publicity and education. Practically the whole medical profession throughout Victoria was now allied with the advisory committee in its efforts to analyse the character of these terrible diseases. Dr. B. Burnett Ham, chairman of the Board of Public Health, urged the compulsory notification of venereal diseases, compulsory and gratuitous treatment at a general hospital or by private medical practitioners or medical officers appointed by the Government, and the appointment of any general hospital receiving aid from the consolidated revenue, or any ward thereof, as a place in which persons of both sexes could be placed for treatment. He considered that the transmission of venereal disease should be an offence punishable by heavy fine or imprisonment, and that women of the unfortunate class should be dealt with solely as a matter of law and order. He also urged that a society for the prevention of venereal diseases should be formed throughout the Commonwealth. Dr. E. Jones, Inspector-General of the Insane, said that unquestionably a very large number of patients who were admitted to lunatic asylums were suffering from syphilis acquired or syphilis inherited. By a coördinated system of investigation the Government was rendering his department very material help.

Federal Committee of the British Medical Association.

The first meeting of the Federal Medical Committee, organised at the last congress, in Sydney, was held in Melbourne on May 27th, when the following delegates attended:—New South Wales: Dr. Abbott and Dr. R. H. Todd. Queensland: Dr. Wilton W. R. Love and Dr. Robertson. Tasmania: Dr. G. E. Clemons and Dr. E. Brooks. Victoria: Mr. G. A. Syme and Dr. R. H. Fetherston. South Australia: Mr. W. T. Hayward and Dr. F. S. Hone. Western Australia: Dr. Hayward. Mr. W. T. Hayward was elected president and Mr. Syme vice-president, Dr. Abbott honorary secretary, with Dr. R. H. Todd assessor. The subjects discussed were the organisation of the profession in Australia and the possibility of acquiring the two existing journals and amalgamating them into a single medical journal.

Obituary.

The death is announced, at the age of 72, of the Hon. W. H. Embling, L.R.C.P. Lond. Mr. Embling was a well-known practitioner in Victoria about 30 years ago. Of late years he had given up practice and devoted his time to politics, having been a member of the Victorian Legislative Council for many years. He was also a director of several public companies and financial concerns. His youth was adventurous, and he was intimately in touch with the Garibaldian party and actually saw some fighting. He was a *littérateur* and musician of more than average ability. Beginning political life as an advanced Radical, he gradually identified himself with what is known locally as the Conservative element.—The death is also announced from pneumonia, at the early age of 42, of Mr. Horace P. Godfrey. Mr. Godfrey was a graduate of the Melbourne University and a Fellow of the Royal College of Surgeons of England. He was a skilful surgeon, and practised at St. Kilda, a suburb of Melbourne. He was honorary surgeon to out-patients at the Alfred Hospital.

Honorary Medical and Surgical Appointments in Melbourne.

The committee of the Alfred Hospital, Melbourne, has decided that in future appointments to the honorary staff preference will be given to those applicants who are practising exclusively in the branch of medicine or surgery in which the vacancy occurs.

June 20th.

Obituary.

EDWARD DUGUID RITCHIE, M.A., M.B., B.C. CANTAB., M.R.C.S. ENG., L.S.A.

Dr. E. D. Ritchie died at his residence at Chandler's Ford, near Southampton, on July 6th, in the fifty-third year of his age. He had been in failing health for two or three years, but few suspected that he was the victim of a serious malady. In January last an exploratory operation was performed, and it was then found that he was suffering from an inoperable growth. His long illness was borne with fortitude and resignation. Edward Duguid Ritchie was born at Brighton on Sept. 16th, 1859. He was the youngest son of the late William Ritchie, Advocate-General of Bengal and Legal Member of the Council of the Governor-General of India. He received his early education at Twyford School, proceeding to Winchester in 1873. There he became a prefect, captain of the school four, and in his last year, 1878, was first in four events and second in three in the school sports. He entered at Trinity College, Cambridge, in the same year and rowed in the First Trinity first boat in 1879. He gained an exhibition in Natural Science and obtained a First Class in the Natural Sciences Tripos in 1882. In 1881 and 1882 he gained the second Blue for throwing the hammer for Cambridge, and in the latter year beat both the Oxford throwers at the

inter-University sports. He entered St. Thomas's Hospital in 1883 and there distinguished himself by the thoroughness and zeal with which he threw himself into his work. He qualified as M.R.C.S. and L.S.A. in 1885 and in 1886 took his M.B. and B.C. degrees at Cambridge, proceeding at the same time to the M.A. He ably filled the posts of house surgeon and house physician at St. Thomas's in 1886 and 1887.

Dr. Hector Mackenzie writes: Dr. Ritchie was looked upon as a man of great promise by his teachers and fellow students. He might, had his inclinations not lain in another direction, have risen to eminence in his profession, but he was attracted by country life, and after spending a short time in general practice at Sevenoaks, he settled in 1888 at Yorktown, near Camberley, Surrey. He married in 1891 Miss Lilian Dora Middleton, daughter of the late Rev. F. M. Middleton, R.D., then Vicar of Camberley. Dr. Ritchie later moved to Blackwater, Hants, where he practised until 1897. He then removed to Chandler's Ford and practised there until he became incapacitated by failing health. Dr. Ritchie will be greatly missed by a large circle of friends and patients, who will sympathise with his widow in her bereavement. He was a country doctor of the best type, upright, honourable, and straightforward as a man, alert, resourceful, and judicious as a medical practitioner, and was fully equipped, both by natural gifts and by training, for his life's work. He was a man of wide interests and he did much outside of his profession for the good of the communities in which he lived. He was an enthusiastic church worker and a keen supporter of local clubs and institutions.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Hugo Neumannn, *privat-docent* of Children's Diseases in the University of Berlin, and author of a well-known work on the Treatment of Children's Diseases.—Dr. Monoyer, formerly Professor of Medical Physics in the University of Lyons.—Dr. Adolf Deucher, formerly President of the Swiss Republic.

THE ROYAL SANITARY INSTITUTE AT TORQUAY.—A two days' provincial meeting of this society was held at Torquay last week, under the presidency of Dr. Louis C. Parkes. Mr. G. Adkins, the medical officer of health of Devon, introduced a discussion on Tuberculosis and Sanatorium Benefit under the Insurance Act. In the course of his remarks he said that tuberculosis could not be controlled by the sanitary inspector; it depended entirely upon the individual patient, who must be instructed. Mr. Adkins gave some suggestions for the provision of sanatoriums and dispensaries. Mr. S. Noy Scott did not think the results of sanatorium treatment justified the confidence so many placed in it, and urged the importance of improving the housing conditions of the people. Dr. R. Allan Bennett (Torquay), Mr. G. M. Winter (Marychurch), Dr. W. Odell (Torquay), Mr. C. W. Vickers (Paignton), Mr. R. B. Searle (Dartmouth), Dr. W. Pitt Palmer (Babbacombe), and others took part in the discussion.

THE ASSOCIATION FOR THE ORAL INSTRUCTION OF THE DEAF AND DUMB.—In the Portman Rooms, Baker-street, on July 16th, the Rev. C. H. Tarez presided over the annual meeting of this association. The report pointed out that the Board of Education had approved a scheme of training which would come into operation next September. Under this scheme children would be admitted at the age of 5 instead of 7 and the teachers would have an academic training. Sir Arthur Conan Doyle, in proposing the adoption of the report, said that there were now 50 schools giving oral education to deaf and dumb people and fulfilling the requirements of the Board of Education. Through the labours of the association deaf children could now be educated and become self-respecting citizens capable in many cases of earning their own living. The demand for teachers was so great that last year half the appointments had to be given to untrained persons. With a little more aid the association could realise its ambition of sending out 15 to 20 trained teachers each year. Mr. MacLeod Yearsley seconded the adoption of the report, which was carried. A demonstration of the teaching of deaf and dumb children between the ages of 3 and 14 was given by Mr. George Sibley Haycock, after which the prizes were distributed by Mrs. Hornung.

THE BRITISH MEDICAL ASSOCIATION.

EIGHTIETH ANNUAL MEETING IN LIVERPOOL.

AFTER an interval of 29 years the British Medical Association has again chosen Liverpool as the site of its annual meeting. The present gathering, which is in progress as we go to press, is the fourth that has been held at this important medical centre. Since 1883 the city and port have undergone great changes and developments, but progress in medical matters of every sort has been even more remarkable. Great modern hospitals, such as the new buildings of the Royal Infirmary and the Northern Hospital, have appeared; the School of Tropical Medicine has been founded; and the University of Liverpool, with its flourishing medical school and laboratories and its clinical school, which links up the teaching facilities of all the general and special hospitals, has arisen out of the humbler University College of the "eighties" and "nineties."

Liverpool is a city of bustle and commercial activities. Its great waterway is an attractive sight. The man who is interested in modern methods of transport must have his admiration roused when he visits the docks or takes even a short trip on the Mersey. The scale of things is so huge, the leviathan liners, the ranges of landing-stages and berths, the forests of derricks and cranes, all testify to a wealth which can levy tribute upon the utmost resources of engineering. These things alone are eloquent of the commerce that is carried on in England's greatest port.

The week's programme of work and play has been well planned, and the success of the eightieth annual meeting of the Association is already assured. The principal buildings of the city and University of Liverpool are all conveniently close together, to the advantage of visitors wishing to make the most of their time. The large chamber of St. George's Hall has been converted into a general reception room. The small concert room of the same building was given up to the momentous four-day sitting of the Representative Body, and on Tuesday to the annual general meeting, at which Professor Robert Saundby vacated the presidential chair for Sir James Barr, the president-elect for the ensuing year. The adjourned general meeting was held, according to custom, on Tuesday evening in the Royal Court Theatre, when the new President delivered his presidential address. An honorary membership of the Association was conferred upon Lord Derby, Chancellor of the University and Lord Mayor of Liverpool.

The Annual Exhibition was held in the Gill-street Market, which is situated quite near the University. The space provided for the exhibition was excellent, and the ample accommodation was appreciated by both exhibitors and visitors. The exhibition was formally opened on Tuesday morning by Sir James Barr, who, with some of the organising officials, made a tour of the display. The building, certainly a dull and dingy one, was converted by a brilliant array of flags suspended from the roof into a pleasant mass of colour, while the stalls were well planned and tastefully decorated.

A preliminary glance at the stands showed that radium and the various adjuncts to electro-therapy were favourite subjects of exhibition on this occasion. There was a very fine display of electrical and high-frequency apparatus. Recent advances in the fashioning of surgical instruments were well illustrated. Although there were

some well-known and familiar exhibits in the section of Foods and Drugs, it was not difficult to find recent additions of interest amongst them. On the whole, the number of exhibits compared favourably with last year, but the representation of the progress of medicine, as evidenced by its actual weapons of attack and defence, was not as full as might have been expected at a meeting convened in such a great commercial and scientific centre as Liverpool. The exhibition gained, however, a very satisfactory attendance. In another column we commence a classified review of the exhibits.

The scientific work of the meeting began, as usual, on Wednesday morning. This was carried on in the various class-rooms and theatres of the University. The number of the sections was this year increased to 20, enabling Anatomy and Physiology and Pathology and Bacteriology to hold independent sessions and securing the welcome revival of the Section of Anæsthetics, which was somewhat unaccountably submerged last year at Birmingham. Whilst, however, the autonomy of sections has been respected, joint meetings between neighbouring sections for the discussion of "borderland" topics have been encouraged. The Addresses in Medicine and in Surgery, which are printed in full elsewhere, were delivered respectively on Wednesday and Thursday afternoons in the Arts Theatre of the University, by Dr. G. A. Gibson, of Edinburgh, and Mr. F. T. Paul, consulting surgeon to the Liverpool Royal Infirmary.

At the annual general meeting on Tuesday afternoon, after a vote of thanks to the retiring President had been passed with acclamation, the President-elect for 1913, Dr. W. Ainslie Hollis, of Brighton, was introduced. Brighton will accordingly be the site of next year's annual meeting of the Association. Dr. Ainslie Hollis is consulting physician to the Sussex County Hospital.

THE ANNUAL REPRESENTATIVE MEETING.

The annual meeting of the Representative Body of the British Medical Association occupied the greater part of the five working days from Friday, July 19th, to Wednesday, July 24th. The programme of business was a very heavy one, for besides many important matters connected with the National Insurance Act the representatives had before them a large number of motions and amendments dealing with general questions of medical politics and with the domestic affairs of the Association. The agenda papers contained nearly 250 items, and it was foreseen that this would be one of the most arduous and responsible meetings to which the Representative Body has been called. For permission to publish this account of the proceedings, which were not open to the lay press, we are indebted to the executive of the Association, who again allowed a member of our staff to be present.

Friday's session, under the chairmanship of Dr. E. J. MACLEAN, was given up to ordinary business, but on Saturday morning the meeting went into committee, with Dr. R. C. BUIST as chairman, for the consideration of the Association's position in relation to the Insurance Act. The discussion at once centred around the first alternative recommendation, for the breaking off of negotiations contained in the Council's report. The first part of this recommendation—

> That the Government be informed that the Association adheres to its minimum demands as formulated in the letter of Feb. 29th, 1912, and since elaborated in interviews with the Chancellor of the Exchequer,

was carried by 181 votes to 20. The second part—

> That the Association calls upon all members of the Association who are members of Advisory Committees in connexion with the National Insurance Act, and also on other medical members of those Committees who are in sympathy with the policy of the Association, to withdraw from these bodies,

was also carried by a large majority. From the beginning it was quite clear which of the two courses put forward by the Council would be adopted, and that recommendation "Y," for the continuance of negotiations, had no chance of success. Most of the representatives had definite instructions from their constituencies upon this point. It was further resolved on Saturday afternoon—

> That all medical practitioners who have accepted office on any of the provisional Insurance Committees throughout the country be called upon to resign their positions.

A motion that the preceding resolution, relating to Advisory Committees, should not apply to Ireland, and that the subject be referred to the joint committee of the British and Irish Medical Associations, was lost at this stage, but was subsequently carried on the report stage by 90 votes to 50.

On Monday it was announced that Mr. T. Jenner Verrall had been elected chairman of Representative Meetings for 1912–13, and Mr. E. B. Turner deputy-chairman, and the meeting again went into committee to continue the discussion on the recommendation of the Council for breaking off negotiations. The third part of recommendation "X" ran as follows:—

> That the British Medical Association calls on all those practitioners who have signed the undertaking, and on all other practitioners who desire the unity of the profession, to refrain from applying for or accepting any post or office of any kind in connexion with the National Insurance Act until such time as the Government has satisfied the Association that its demands will be met.

This brought up the very important question of sanatorium benefit, and Dr. T. BARRETT HEGGS, in an admirable speech, proposed as an amendment—

> That the words "except in regard to sanatorium benefit, provided it is carried on in accordance with the wishes of the Association," be inserted after the word "Act."

This was ably supported by Dr. D. LAWSON, and after a keen discussion it was passed by 137 votes to 54, 16 members abstaining from voting and 18 being absent. It was further decided that the foregoing resolution should not preclude any medical officer of health from giving advice to public bodies in his official capacity; that a new State Sickness Insurance Committee should be appointed to watch the interests of the profession and report on the whole situation to the Council; and that meanwhile all steps should be taken to perfect the organisation of the profession and to increase the Central Insurance Defence Fund.

On Tuesday morning the representatives again sat in committee, and various resolutions were passed with a view to obtaining more signatures to the Association's pledge and to raising additional guarantee funds. Finally, it was agreed that the remainder of the report of the Council with reference to the Insurance Act should be approved, and the committee stage ended.

During the report stage the recommendations passed whilst in committee were brought forward in order, and although many were re-debated with vigour the great majority were adopted unchanged and became the decision of the Association. As was to be expected, the previous day's amendment, to exclude sanatorium benefit from the ban placed upon all posts and offices in connexion with the Insurance Act until the granting of the Association's demands, was keenly contested on the report stage by a very determined section of the meeting. An amendment that this matter be postponed by referring it to the divisions for their consideration was proposed by Mr. E. H. WILLOCK and seconded by Dr. MAJOR GREENWOOD. After a spirited discussion the vote was taken, when the amendment was negatived by 105 votes to 74, and the day's proceedings ended.

On Wednesday morning, in response to a question, the solicitor pointed out how by the Articles a resolution affecting the policy of the Association could not be effective unless a majority of two-thirds was obtained. The debate on the proposed separation of sanatorium benefit from medical benefit was then quickly resumed. There was a general wish for unity, but it was felt that a compromise between the two sections of the Representative Body would be hard to attain. Nevertheless, conciliatory counsels prevailed, and at midday the third part of the main resolution, with its exception in favour of sanatorium benefit, was confirmed by a large majority, 117 voting for it and 22 against. A rider proposed by Dr.

G. E. Haslip, with the intention of uniting both parties, to the effect that:

> Before any practitioner undertakes any work in connexion with sanatorium benefit the conditions and duties of such appointment shall be approved by the Council,

was then carried *nem. con.* amidst much applause.

With this important matter of policy settled, the remaining business of the report stage was soon brought to a close, and the Representative Meeting concluded. Praise is due to Dr. Maclean for his skill in handling the meeting during its later sessions.

THE PRESIDENTIAL ADDRESS.

Sir JAMES BARR in his Presidential Address applied to the medical profession the critical questions propounded by Bergson in his Huxley Lecture with regard to man himself: "What are we? What are we doing here? Whence do we come, and whither do we go?" Can we of the medical profession show any sufficient *raison d'être* for our existence? Are we of sufficient value to individuals and to the State to justify our continued existence as a profession? Is the world any happier for our presence? Are we really an advantage to the higher evolution of the race? These are the questions Sir James Barr propounded. He first disposed of the cheap criticism levelled in these latter days with increasing frequency against the medical profession, that it subsists on the misery of others, by pointing out that even though that be to a certain extent true, it subsists not by creating but by alleviating misery. He pointed out that during the last century or more we have been very busy trying to find out the causes of disease, the best methods of their elimination, and the proper treatment of our patients, in which we have to a large extent succeeded, with the consequence that a selective death-rate, which was, and is, Nature's method of eliminating the unfit, has been at least partially suspended by our efforts. He contended that it is consequently of importance that we should see that the highest form of protoplasm, the germ plasm, that is capable of starting the individual life and giving rise to the greatest amount of differentiation of structure with the accompanying functions, should be of the finest order, for an impure germ plasm cannot tend to the higher evolution of the race, no matter under what environment it is developed. While successfully interfering with the selective death-rate which Nature employed in eliminating the unfit, we have made no serious attempt to establish a selective birth-rate so as to prevent the race being carried on by the least worthy citizens. We are apt to forget that a high birth-rate is practically always associated with a high death-rate, and a low birth-rate with a low death-rate. The former is Nature's method, effective though slow, and produces a fine race. Advancing civilisation, however, holds it too crude and barbarous, and as man rises superior to Nature and obtains more and more control over her laws, such barbarities are replaced by more humane methods.

The object of professional existence, Sir James Barr said, has hitherto been the prevention and cure of disease, the alleviation of human suffering, and the prolongation of life. That, he contended, is not enough. We must raise up a vigorous, intelligent, enterprising, self-reliant, and healthy race. We come with the tradition of healers both of mind and body, but there must be no hesitation as to whither we go. We must not rest content with the mere prevention and treatment of disease, we must instil into the public mind the need for intellectual and physical health. To accomplish this we must begin with the unborn. The race must be renewed from the mentally and physically fit, the moral and physical degenerates should not be allowed to take any part in adding to the race. Above all, we must breed for intelligence. The laws of heredity should be widely taught, so that those with hereditary blemishes may heed their moral responsibilities as regards bringing children into the world. It is a question of quality rather than quantity. Of course, he continued, we cannot make all equal; there is no such thing in Nature as equality, and there never will be, and it is not desirable that there should be, but we could raise the average plane and get rid of the present decadence. He dwelt on the duty of medical men when consulted on questions of matrimony and reproduction not to encourage the mating of mental and physical weaklings. The public conscience is being awakened on this point. Advanced physiology and biology demand even a more advanced study of the laws of health than of the tendencies to degradation and disease. None of our schools are yet properly equipped for this teaching, but the post-graduate work on this subject at the Liverpool University will bear favourable comparison, he said, with that of any other school in the kingdom.

Sir James Barr admitted the great advance in modern times in regard to the prevention and treatment of infectious diseases, which is largely the result of the work of the medical officers of health. But even so, their work is purely environmental, and the only lives which they save are those of susceptible individuals whose resisting power is low but who have not been infected. When infection has taken place recovery depends on the patient's innate powers and on medical treatment. The sanitarians have largely succeeded in abolishing cholera, typhus, and typhoid fever by getting rid of the sources of infection and thus limiting the incidence of those diseases, but they have in no way added to the immunity of the race or lessened the susceptibility of the individual. He then expressed the opinion that if we could abolish the tubercle bacillus in these islands we should get rid of tuberculous disease, but we should at the same time raise up a race peculiarly susceptible to this infection—"a race of hothouse plants which would not flourish in any other environment"—with the result that the nervously unstable, the insane, and the feeble-minded would increase at even a greater rate than at present. With regard to the venereal diseases, while their virulence has no doubt considerably abated, Nature's methods are too slow, and he urged a determined effort to stamp them out "regardless of the pharisaical hypocrisy of some moralists." The suffering caused to innocent wives and children by these diseases calls aloud for their elimination. Referring to the work of Sir Almroth Wright on vaccine therapy in relation to the pyogenic organisms and the pneumonia diplococcus, he expressed the opinion that no serious operation should be undertaken in the mouth until the individual has been rendered more or less immune to the pathogenic organisms which frequently flourish in the oral cavity.

But the infectious diseases, he said, merely touch the fringe of preventive medicine and have little to do with the health of the community. And in sketching the lines along which progress must proceed, Sir James Barr considered it in relation to certain functions of the human body. It is, he said, the higher evolution of the intellectual grades of society that we require at the present day. If the morally, intellectually, and physically well-developed members of the community are to have a fair chance of development, their energies must not be entirely dissipated in providing for the progeny of wastrels. During the last half century there has been not only an absolute but also a relative increase in insanity, and this increase is becoming more and more noticeable among decadent stocks. Persons of this class, though usually short-lived, are very prolific, and are not controlled by any economic considerations. The same proclivity is noticeable among the wastrels, the unemployables, the paupers, and the ne'er-do-weels. He deprecated the present tendency to devote more attention to the morbid manifestations of the brain, to its degenerative changes and the fall from its high state, than to the consideration of its evolution and development. The neuroses, he said, are studied more for their creation than for their elimination. Weird methods of study are encouraged, sensational and erotic tendencies are looked upon as natural rather than as, what they really are, degradation processes. A defective nervous system, moreover, is often at the basis of imperfect metabolism, with the formation of autogenous poisons which affect the nerve centres. In this way such diseases as epilepsy and hysteria are transmitted from one generation to another.

But, he added, it is not alone the defects, but also the stability and higher innate qualities of the brain that are inherited, and these also are capable of enormous development. This does not, however, justify the apparent belief of some educators, that with equal opportunities all individuals should develop alike, and he declared that the "ignorant plan of affording equal opportunities to all, opportunities of which the vast majority cannot make use, has cost the country an enormous amount of money—money wasted—which, for all the good it has done, or ever can do, might as well have been dropped to the bottom of the ocean." He drew the conclusion that

"the feeble-minded individuals are a growing incubus to the nation, and should be dealt with in the most humane manner by their sterilisation or segregation. ..... It is for the nation to decide which method shall be adopted, but the latter will comport best with the general feeling of the community." In like manner he insisted on the dependence of diseases of the heart and circulation, of the glandular system, the skin, and the alimentary tract, on a defective standard of physical health, and the subjection of the body to the strain of injurious factors other than the ordinary processes of wear and tear that necessarily accompany healthy existence. Diseases of the heart are perhaps more rarely prevented than those of any other organ, yet even in these days the attempt to prevent them is rare.

A clear comprehension of the physiology of the heart is of much more importance for a right understanding of the working of that organ in health and disease than any amount of pathology. The wider recognition of the fact that free calcium ions are essential for the continued contraction of the cardiac muscle, and of the necessity for maintaining a difference in electrical potential between the salts in the cell and those in which the muscle tissue is bathed, the better understanding that chronic degenerative lesions of the heart and arteries usually arise from causes acting on the periphery, will prepare the practitioner better, not merely to treat these lesions, but to prevent them. What, he asked, is the good of measuring arterial blood pressure if you are not alive to its importance and are not prepared to analyse its significance and regulate its effect? "Methods of precision are essential in all scientific research, but in the interpretation of the results it is not the instrument but the man behind the instrument who makes or mars the observation." In like manner with regard to the circulation, we must be careful that efficiency is attained at the least possible cost of energy. Thus, while free calcium ions are absolutely essential for the maintenance of cardiac contraction, any excess of fixed lime in the circulation increases the viscosity of the blood and adds to the work of the heart. A nice adjustment of the electrolytes in the circulation is essential for the efficient working of all the functions of the body.

After referring to the great advances in chemical biology in recent years, in which work Liverpool has taken a prominent part, he pointed to future needs. The simple and malignant diseases of the mammary glands in the female and the prostate in the male are largely associated with irritation in their ducts and defective functional activity, and he expressed his conviction that methods of preventing such occurrences would soon be found. In skin diseases the old idea that irritation may arise from within as well as from without is likely to lead to more effective treatment than the present habit of ascribing everything to a microbe. The parts played by anæmia and deficiency of lime salts in gastric disturbance, the effect of excess of lime in thickening the pylorus, insoluble lime soaps as sources of intestinal irritation, the dependence of many affections of the digestive tract on dietetics, are stages in the path of progress. While the evil effects of alcohol primarily fall on the stomach the teetotaler, by his overfeeding and immoderate consumption of lime salts, suffers from arterio-sclerotic changes and chronic diseases of the kidneys. "In the causation of diseases of the circulatory system," he said, "alcohol does not play the prominent part with which it is usually credited, but syphilis is a very potent factor."

Sir James Barr's concluding words were a message of encouragement and hope for the general practitioner. "In my opinion," he said, "the future of medicine will rest with enlightened and highly educated general practitioners—men who will look after the health of the community, who will see that mechanism of a high order is produced, and who will see that the machinery of the individual is properly lubricated and not subjected to any unnecessary friction or strain." The enlightened public will look to their medical attendants as guides, philosophers, and friends both in health and disease, to which end a properly regulated State examination would materially conduce. Finally, he said, it must be recognised that the outlook of the medical profession, though at present dismal, is merely a transition stage which will soon pass away.

THE ANNUAL EXHIBITION.

The position of the Gill-street Market, in which the annual exhibition was held, is not imposing, but if its surroundings are uninviting, it is in close proximity to the London and North-Western terminus, with which it is connected by Copperas Hill. The organising committee may be congratulated upon the bright appearance which a profuse decoration with bunting gave the interior of the building. The exhibitors caught the same spirit, for they were quite lavish in the materials used to make their stalls attractive, and the accommodation given them was greater than usual. There was also ample room between the stalls, which made it comfortable to pass up and down them in leisurely survey. Following a movement which was initiated last year, the exhibition was formally opened by the President, after whose visit the usual animated scene commenced, the exhibitors discussing with enthusiasm the merits of the exhibits with the many medical men who attended. The place at once assumed something of the animated appearance of an Eastern bazaar. Interest appeared to be most centred in the display of electric appliances connected with electro-therapeutics; there were certainly some very fine illustrations of apparatus used in this branch of medicine. The show of surgical and hospital appliances was hardly so imposing as in previous years. Sero-therapy was interestingly represented, and there were many examples of elegant pharmaceutical preparations. In presenting a review of the principal exhibits we find it convenient, as before, to classify them under the following heads: I., Electro-Medical Appliances; II., Surgical and Hospital Appliances; III., Drugs; IV., Foods and Food Products; V., Mineral Waters, Beverages; VI., Publications.

I.—ELECTRO-MEDICAL APPLIANCES.

The snapping and buzzing of electric discharges soon intimated to the visitor that live electrical apparatus was around him, the intimation reaching him at the main entrance, where a large part of this section of exhibits was situated, and clearly proved the prominent place which this side of practical medicine has now secured for itself by the uses found for X rays, ultra rays, high-frequency currents, and radio-active agents. There were here also apparatus for the production of ozone, for ionic medication, for the production by electricity of high temperatures, and so forth.

An interesting exhibit bearing on all kinds of medical apparatus in which electricity is the motive was presented by Messrs. Schall and Son, of 71 and 75, New Cavendish-street, London. Here was a new high-frequency apparatus, known as the "Invictus," which possesses the unquestionable advantage that the use of a coil, interrupter, switchboard, and resonator is not necessary. This firm also showed a thermo-penetration apparatus by which the muscles and tissues can be heated up by the current in the same way that a wire is heated. No faradic sensation is felt, it is stated, under this "diathermic" treatment. The exhibit included a complete X ray outfit which avoids many sources of inconvenience in X ray practice, and the "pantostat," a universal apparatus giving current for most purposes, and supplying motive power for Professor Leduc's or Dr. Lewis Jones's interrupter. A novel and interesting exhibit was made by the Cavendish Electrical Company, Limited, of 130, Great Portland-street. This was an apparatus for producing static currents from any X ray coil working with its own interrupter and switchboard in the usual way. Thus may be produced "the static breeze," "static effluve," "static sparking," "static induced current," and the "Morton wave current" exactly as from a large static machine. Ionic medication was demonstrated also by means of apparatus presenting decided advantages, and some X ray apparatus at their stall showed improvements in design which would facilitate application. Messrs. Siemens Brothers and Co., Limited, of Caxton House, Westminster, drew attention to some admirably constructed electric apparatus, including the oscillothermex, which provides for most electro-medical work—diathermic treatment, high-frequency, unipolar, bipolar condenser, and auto-conduction treatment. This firm also showed a universal electro-medical apparatus for galvanisation, faradisation, cataphoresis, light or cautery, an X ray outfit for gynæcological treatment, and a clever screening apparatus (Levy Dorn), protecting the operator from the rays. Here also was an interesting exhibit of the

tantalum dental instruments, evaporating dishes, forceps, and injection needles, and a series of radium salts and apparatus and radio-active material, and earths to be used in the treatment of rheumatism and allied disorders. Evidence again was not wanting at the stall of Messrs. W. Watson and Sons, Limited, of 313, High Holborn, London, that great attention had been given to improvements in electro-medical apparatus. A couch to be used for the patient in X ray work was full of devices of a practical kind; a mercury interrupter and an apparatus for supplying rhythmic current were also valuable appliances.

Ozone, as a product of electric energy, may be fairly mentioned in this section, and some of the best examples of ozone-producing machinery were exhibited by Ozonair, Limited, of 96, Victoria-street, Westminster. Illustrations were given at this stall of the application of ozone to the purification and freshening of air in public institutions as well as to many industrial processes. A neatly designed apparatus for the relief of pyorrhœa by the use of ozone was a novelty displayed at this stand. All departments of electro-medical work were adequately represented at the stall of Messrs. Harry W. Cox and Company, Limited, Gray's Inn-road, London, including standard X ray apparatus, a mercury interrupter, a portable and adjustable couch, a protective tube holder, and an apparatus capable of carrying heavy currents through twelve electrodes for the treatment of obesity. A compressor designed for comfort and convenience is also well worth mentioning.

Messrs. Newton and Wright, Limited, of 72, Wigmore-street, London, gave a most interesting demonstration of X ray installations especially designed for rapid work. Their "Instanta" coils are very effective. This firm also showed a new form of couch with protective tube box and a diaphragm compressor which secures convenience and comfort to both subject and operator. There were several ingeniously contrived appliances for the local and general administration of radiant heat and light shown at the stall of the Dowsing Radiant Heat Company, Limited, of 105, Great Portland-street, London. The apparatus is under complete control and has been used with advantage chiefly in gout and rheumatism and in other disorders of metabolism. The exhibit of Radium, Limited, of 4, Albert-square, Manchester, may be mentioned in this section, inasmuch as the standardisation of the activators is expressed in electrostatic units. Such activators are supplied by this firm on hire to patients for home use, giving any desired degree of radio-activity which can be applied, moreover, to waters of low radio-activity, both for bathing and drinking purposes. Specimens of radio-active earths made so by artificial means were submitted for inspection at this stand. A degree of radio-activity much higher than "fango" or natural radio-active mud can thus be obtained.

II.—SURGICAL AND HOSPITAL APPLIANCES.

One of the most comprehensive collections of surgical appliances was that of Messrs. Down Bros., Limited, of 21 and 23, St. Thomas's-street, London, S.E. Besides a presentation of instruments keeping pace with modern surgical demands and advances, this firm had an excellent equipment representing modern surgical inventions in the shape of an operation table and aseptic hospital furniture of general application. A fine series of skiagrams was shown by Mr. C. A. Hoefftcke, of 21, Woodstock-street, London, W., giving the results obtained in cases of joint diseases and fractures under treatment with the exhibitor's appliances, who, as is well known, has given considerable study to the mechanical requirements of this treatment. Aseptic surgical glassware for hospitals was a special feature of the stand of Mr. R. B. Turner, of 11 and 12, Foster-lane, Cheapside, London, E.C. This glassware is just what is wanted in the laboratory in all cases where a scientifically clean surface is necessary. Mr. G. H. Zeal, of 82, Turnmill-street, London, E.C., showed numerous examples of his "Repello" clinical thermometer and also of his germ-proof clinical thermometer. The Repello clinical thermometer, as has been pointed out in our columns, does not require shaking down to re-set the mercurial column, that being done by depressing a glass bulb attached to the instrument. We have also noticed on a previous occasion Messrs. Skeffington's (49, Ulundi-road, Blackheath, S.E.) patent recumbent invalid lifters, which are of the greatest service in all institutions for the treatment of the sick or homes where a permanent invalid is being cared for. Illustrations of the universal lifter entailing no disturbance of the patient in bed were given at the stand. The exhibit also included a sacrum lifter, a lifting cushion, an inclinator, and a dysentery mattress.

There was much that was instructive to inspect at the stand of the Holborn Surgical Instrument Company, Limited, of Holborn-circus, London, E.C. In addition to some excellent examples of hospital furniture, there was a model plant for sterilising dressings and instruments. There were also a saline infusion apparatus with vacuum flask and hot-air chambers, and suction glasses for Bier's treatment, all of which were constructed with care and finish. Messrs. J. Nesbit, Evans, and Co., of Floodgate-street, Birmingham, showed some very intelligently designed hospital bedsteads, amongst them being an anti-accident surgical bedstead, a "wheeling out" bedstead, and a parturition maternity bedstead. Messrs. Chas. Hearson and Co., Limited, of 235, Regent-street, London, W., exhibited examples of their much used biological incubators, the temperature of which is controlled by a patent capsule, superseding the old mercury regulator. The stall of Messrs. Claudius Ash, Sons, and Co., Limited, of 5 to 12, Broad-street, Golden-square, London, W., was of interest chiefly to dental surgeons, the exhibits comprising anæsthetic apparatus, operating chair, and sets of dental instruments.

There were several genuine novelties included in the exhibit of Messrs. Alexander and Fowler, of 104, Pembroke-place, Liverpool, who showed an antiseptic locker, wash-stand, folding table, and instrument table in opaline. All these articles would be of distinct use either in private or institutional treatment of the sick. There were here also some ingenious forms of otoscope, laryngoscope, nasal endoscope, and urethroscope, as well as splints and other appliances made of a new alloy of aluminium which does not tarnish or corrode. A large and valuable assortment of optical instruments was shown by Messrs. Reiner and Keeler, of London and Bradford, including amblyoscopes, retinoscopes, ophthalmoscopes, and the Edridge-Green colour perception lantern and classification tests. Messrs. Salt and Son, of 5 and 6, Cherry-street, Birmingham, and 3, Holles-street, Cavendish-square, London, exhibited, amongst other useful articles, their patent varus boot, designed to correct the inversion of the toes in club-foot. The firm showed a kidney belt and corset and other ingeniously designed supports. The stall of Messrs. Reynolds and Branson (Leeds) presented a variety of new apparatus for inspection, including methods for applying ionic medication, for giving intramuscular and intravenous injections of salvarsan, and apparatus for oxygen and thorium inhalation. The quality of the show at this stall was high. Messrs. Mayer and Meltzer, of 71, Great Portland-street, London, W., had a comprehensive exhibit of modern surgical instruments and hospital furniture. Mention may be made of the "emandem" university electric examination lamp for use in the operation theatre, the out-patient department, and the ward. This lamp is also well fitted for use in the consulting room of surgeon or specialist. The firm showed also the Hill-Herschell improved gastroscope and several modern instruments for abdominal surgery and for tonsil enucleation designed by well-known members of the medical profession. Messrs. Hawksley and Sons, of 357, Oxford-street, London, W., displayed clinical polygraphs, sphygmomanometers, and hæmoglobinometers by various designers. Examples of surgical advance were well represented in the exhibit of Messrs. John Weiss and Son, Limited, of 287, Oxford-street, London, W., including abdominal and prostatic retractors, a "606" apparatus, some mastoid instruments on the pattern approved by some leading operators, and some new inventions that have proved of service in ophthalmological practice. The orthopædic appliances of the Scholl Manufacturing Company, 1, 2, 3, and 4, Giltspur-street, London, E.C., are well known to readers of THE LANCET, and many of their ingenious and useful designs, such as a foot-rest, an arch support, and an anti-bunion spring, were brought to the notice of the visitors. At the Liverpool Lint Company, of Mark Street Mills, Liverpool, attention was drawn to some novelties in surgical dressing, including vulnoplast, a dressing with self-adhesive edges, the centre portion being composed of several layers of gauze treated with an antiseptic. "Impermiettes," which were also shown by this firm, are sheetings possessing

advantages over ordinary rubber-coated sheetings in the manufacture of aprons, sleeves, gloves, &c., for use in operating as well as for bed sheeting. The manner of using Vernon-Harcourt's chloroform inhaler was explained by a representative of Messrs. John J. Griffin and Sons, Limited, of Kemble-street, Kingsway, London, W.C., at their stall, on which were to be found several examples of an apparatus which is generally allowed to ensure accuracy of dosage of the anæsthetic.

(To be continued.)

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the first professional examination of the Conjoint Examining Board held on July 16th, 17th, 18th, and 19th the following candidates were approved in the undermentioned subjects, viz. :—

Chemistry and Physics.—Edward Beric Alabaster, Birmingham University; Douglas Harris Anthony, St. Mary's Hospital; Philip Ardern Ashcroft, Manchester University; Charles James Longworth Blair, Westminster School; William John Colborne, Epsom College; Ahmed Tayel Dabbous, King's College; William Robinson Dickinson, St. Bartholomew's Hospital; Arthur Alleyne Kingsley Conan Doyle, St. Mary's Hospital; Keith Mitchell Keitley Duff, Guy's Hospital; William Farquharson, St. Mary's Hospital; Frederick Oloff Fehrsen, London Hospital; Philip Edward Francis Frossard and Lacy Norman Glaisby, London Hospital; Oliver Halstead, Guy's Hospital; James Maurice Harrison, St. Thomas's Hospital; John Anderson Hill and Herbert Meade Hobson, London Hospital; George Hoffmeister, Middlesex Hospital; Charles Ewart Hopwood, Manchester University; Percy Gilbert Horsburgh, St. Bartholomew's Hospital; William Austen Jackman, Bristol University; William George Johnston, St. Mary's Hospital; Francis George Le Couilliard, Guy's Hospital; William Marriott, St. Thomas's Hospital; William Watson Newton, Birmingham University; Hubert Llewellyn Pridham, St. Paul's School; Cecil Nuttall Ratcliffe, Liverpool University; Mohammed Tewfik Talaat, King's College; Emil Torday, London Hospital; Arthur Stewart Westmorland, St. Mary's Hospital; and William Harold White, St. Thomas's Hospital.

Chemistry.—Edwin Butler, Bristol University; Bernard Crossley-Meates, St. Bartholomew's Hospital; Hubert Carr Duggan, Guy's Hospital; Abdel Aziz Hassan El-Zeneiny, Cairo and London Hospital; Henry John Ewart, University College; Anis Mishriky, Cairo and St. Mary's Hospital; John Harris Ekin Sandford, St. Bartholomew's Hospital; Harry Mortimer Wharry, Oxford University and St. Bartholomew's Hospital; Thomas Wilson, Manchester University; Leonard Heatley Woods, St. Lawrence College, Ramsgate; and Thomas Fernando Zerolo, St. Bartholomew's Hospital.

Physics.—Richard Ambler, Middlesex Hospital; Adolfo Arias, St. Bartholomew's Hospital; Arthur James Bado, St. Thomas's Hospital; Noel Arthur Hamilton Barlow, Guy's Hospital; Leonard Henry Dardier, London Hospital; Albert Victor Spurgeon Davies, St. Mary's Hospital; Alfred Beresford Dummere, London Hospital; John Henry Cox Eglinton, Bristol University; Ahmed Mostafa El-Mishad, Cairo and St. Thomas's Hospital; Walter Davies Pearman, Birmingham University and St. Mary's Hospital; Rupert Idris Rhys, University College, Cardiff; George Richards, Guy's Hospital; Ronald James Scarr, Salford Technical Institute; Basil Lyndon Skeggs, St. Bartholomew's Hospital; and James Harry Wiseman, Sheffield University.

Biology.—Esawy Almed, London Hospital; Charles James Longworth Blair, South-Western Polytechnic; Vivian Haweis Butcher, St. Bartholomew's Hospital; John Leycester Dudley Buxton, University College; Henry George Richmond Canning, Portsmouth Municipal College; Henry Hutton Castle, St. Thomas's Hospital; Edwin Alfred Clegg, Middlesex Hospital; Antonio Mario Clement, St. Thomas's Hospital; George Wilfred Coombes, London Hospital; Walter Tyrrell Cooper, Birkbeck College; Ahmed Tayel Dabbous, King's College; William Adlington Date, Epsom College; William Hood Dye, L.D.S. Eng., Birkbeck College; Philip Edward Francis Frossard, London Hospital; William Vincent Gabe, Middlesex Hospital; El-Sayed Gouda, Cairo and London Hospital; Jean Joseph Paul Jacques Hagron, Middlesex Hospital; Melville St. Clair Hamilton, St. Thomas's Hospital; Frederick Hunter Hyland, Leeds University; Elma Jamilla Ishmael, London School of Medicine for Women; Mohammed Kamil, King's College; Guy Kinneir and Francis Wharton Lemarchand, St. Bartholomew's Hospital; William Marriott, St. Thomas's Hospital; Anis Mishriky, Syrian Protestant College and St. Mary's Hospital; George Edward Mullins and William Watson Newton, Birmingham University; Walter Davies Pearman, Birmingham University and St. Mary's Hospital; Earl Leslie Robert, Middlesex Hospital; John Andrew Adamson Prinski Scott and Emil Torday, London Hospital; and Ronald Agars Walker, St. Thomas's Hospital.

UNIVERSITY OF LONDON.—At examinations held in July the following candidates were successful :—

SECOND EXAMINATION FOR MEDICAL DEGREES, PART II.

Bertrand Pulvermacher Allinson, University College; Donald Aucutt, King's College; Kanshi Ram Batra, University College; Kenneth Biggs, London Hospital; Arthur Leslie Blunt and Owen Deane Brownfield, St. Thomas's Hospital; John Capell, St. Bartholomew's Hospital; Frank Chadwick, Victoria University of Manchester; *†Philip Cyril Powter Cloake, B.Sc., London Hospital; Clement Cooke, St. Bartholomew's Hospital; John Nissen Deacon and Cedric Roland Denny, London Hospital; John Yerbury Dent, King's College; Eric Gordon Dingley, St. Bartholomew's Hospital; Cyril Henry Edwards, Guy's Hospital; Harold Ellis, University College, Cardiff; James Fanstone, London Hospital; Robert Hood Fleming, B.Sc., Middlesex Hospital; Annie Mary Forster, London (Royal Free Hospital) School of Medicine for Women; Hugo Rudolph Friedlander, St. Thomas's Hospital; Gerald Francis Petvin Gibbons, St. Bartholomew's Hospital; Ernest Frederick Guy, University College, Cardiff; Daniel Thomas Harris, Victoria University of Manchester; Ernest Eugène Herga, London Hospital; Sydney Howard Hodges, King's College; Ronald Nelson Hunter, London Hospital; Charles Evans Jenkins, London Hospital and University College, Cardiff; Rosalie Jobson, London (Royal Free Hospital) School of Medicine for Women; Rhys Trevor Jones, University College, Cardiff; William Arthur Edward Karunaratne, University College; Kingsley Wassell Lewis, University College and University College, Cardiff; *Geoffry Challen Linder, Desmond Garrett Fitzgerald Moore, and John Branwell Mudge, St. Bartholomew's Hospital; Kathleen Hazel Parkinson, London (Royal Free Hospital) School of Medicine for Women; †Owen Parry-Jones, London Hospital; Hugh Roger Partridge, University of Leeds; Arthur Henry Pemberton, University College; Leonard George Phillips, Middlesex Hospital; Leslie Ellis Pimm, King's College; Kenneth Foel Purkis and Cedric Sydney Lane Roberts, Guy's Hospital; Violet Ione Russell, London (Royal Free Hospital) School of Medicine for Women; Pinthu Sal, St. Thomas's Hospital; Eric Arthur Langford Sansom, University College; Saroz Kumar Sanyal, London Hospital; William Goodman Shakespeare, King's College; Edith Annie Shaw, London (Royal Free Hospital) School of Medicine for Women; George John Chase Smyth, King's College; Elsie Stansfeld, London (Royal Free Hospital) School of Medicine for Women; Lionel Frederick Strugnell, St. Bartholomew's Hospital; *†Thomas Collyer Summers, London Hospital; Leonard Hankinson Terry, St. Bartholomew's Hospital; †John Oscar Thomas, King's College and Westminster Hospital; George Nesbit Welsford, University of Bristol; John Douglas Wilkinson, St. Thomas's Hospital; Cyril Mathias Williams and Leslie Herbert Worthy Williams, University College, Cardiff; and Henry Wardel Snarey Wright, University College.

* Distinguished in Anatomy. † Distinguished in Pharmacology.

M.D. EXAMINATION.

Branch I., Medicine.—Sydney Herbert Booth, B.S., University of Leeds; Harry Cecil Rutherford Darling, B.S., and Harold Sydney Furness, B.S., University College Hospital; Rose Fanny Jordan, B.S., London (Royal Free Hospital) School of Medicine for Women; Theodore Stewart Lukis, B.S. (University medal), St. Bartholomew's Hospital; Edward George Perodeau, B.S., and Clement Edward Shattock, B.S., University College Hospital; Norman Tattersall, B.S., Victoria University of Manchester; Henry Ashbourne Treadgold, B.S., University of Cambridge and King's College Hospital; Henry Owen West, B.S., King's College Hospital; and Stanley Wyard, B.S., University College, Cardiff, and University College Hospital.

Branch III., Mental Diseases and Psychology.—Bernard Hart, University College Hospital; and George Ernest Peachell, B.S., St. Mary's Hospital.

Branch IV., Midwifery and Diseases of Women.—Henry Lewi Barker, B.S., St. Mary's Hospital; Reginald Lionel Ernest Downer, B.S., St. Bartholomew's Hospital; Henry Bertram Foster, Guy's Hospital; George Blenkhorn Harland, B.S., University of Durham; and George Maxted, B.S. (University medal), Guy's Hospital.

Branch V., State Medicine.—William Allen Daley, B.S., B.Sc., and William Scarisbrick, B.S., B.Sc., University of Liverpool.

Branch VI., Tropical Medicine.—Ardeshir Koyaji Contractor, B.S., London School of Tropical Medicine and University College Hospital; Frederick Champ McCombie, King's College Hospital and London School of Tropical Medicine; Dossibai Rustomji C. Patell, B.S., London School of Tropical Medicine; and Reginald Oliver Sibley, St. Mary's Hospital.

M.S. EXAMINATION.

Branch I., Surgery.—John Philip Buckley, University of Cambridge and Victoria University of Manchester.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated :—

Surgery.—A. E. Bullock (Sections I. and II.), St. Mary's Hospital; L. M. Ladell (Sections I. and II.), London Hospital; M. M. Patterson (Sections I. and II.), Royal Free Hospital; C. E. Reckitt (Section II.), Guy's Hospital; and A. J. Tozer (Sections I. and II.), St. Mary's Hospital.

Medicine.—W. H. Broughton (Sections I. and II.), Manchester; A. E. Bullock (Sections I. and II.), St. Mary's Hospital; P. M. Másiná (Sections I. and II.), University College Hospital; H. Rimington (Sections I. and II.), St. Bartholomew's Hospital; and H. Robinson (Section I.), Manchester.

Forensic Medicine.—E. M. Brand, Royal Free Hospital; W. H Broughton, Manchester; A. E. Bullock, St. Mary's Hospital; H. Cox, Birmingham; T. Gibson, Madras and Middlesex Hospital; W. S. Hyde, Guy's Hospital; P. M. Másiná, University College Hospital; and M. M. Patterson, Royal Free Hospital.

Midwifery.—A. E. Bullock, St. Mary's Hospital; H. H. Fairfax, Charing Cross Hospital; T. Gibson, Madras and Middlesex Hospital; and D. Havard, London Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery :—A. E. Bullock, L. M. Ladell, and A. J. Tozer.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

DEGREE OF M.D.

John William Taylor (honours).

FINAL EXAMINATION FOR THE DEGREES OF M.B., CH.B.

Alfred George Timbrell Fisher, Henry Wyndham Goodden, Charles Herbert Hart, and Vivian St. Leger Pinnock.

Part I. only.—P. Emil Christofferson and Claude Kingston.

DIPLOMA IN PUBLIC HEALTH.

Part I. only.—Thomas Aubrey, Sidney Bazalgette, Alexander Henry Finch, and Wallace Pomeroy.

THIRD EXAMINATION FOR THE DEGREE OF B.D.S.

Reginald Hugh Basker.

SECOND EXAMINATION FOR THE DEGREE OF B.D.S.

Alfred Wilfred Adams and Frank Keith Hayman.

QUEEN'S UNIVERSITY OF BELFAST.—At examinations held recently the following candidates were successful in the subjects indicated:—

FIRST MEDICAL EXAMINATION.

Chemistry.—Joseph Adams, Charles Barton, Marion Crawford, John Harold Davison, John Fegan, Joseph Mary Alphonsus Gorman, Robert Hall, Arabella Crory Kirker, Joseph Gerard Magella Leyden, John Joseph Marner, Patrick Joseph Murnane, Hugh John O'Prey, William Henry Pedlow, Charles Alexander Whitfield, and John Wilson.

Experimental Physics.—Joseph Adams, Samuel Thomas Alexander, Charles Barton, John Harold Davison, Dorothy Isobel Dobbin, John Fegan, Arabella Crory Kirker, Joseph Gerard Magella Leyden, John Joseph Marner, Thomas J. Marner, Patrick Joseph Murnane, Charles Alexander Whitfield, and John Wilson.

Zoology.—George Vance Allen, Charles Barton, William Bryars, Alfred George Campbell, George Chesney, Neville Walton Clarke, Charles Davey Crawford, Marion Crawford, Alfred Charles Dickey, Grace Marion English, Francis Ewart, Eli Freeman, Hugh Edwin Hall, Robert Hall, James Austin Harbison, James Hugh Bryson Hogg, Arabella Crory Kirker, Joseph Gerard Magella Leyden, William M'Bride, Robert Neil Ballagh M'Cord, Nathaniel M'Cullagh, Joseph Patrick M'Ginley, Bernard William M'Kinney, Michael M'Menamin, Frederick M'Sorley, Patrick J. M'Sorley, Hugh Edward Magee, John Joseph Marner, Thomas J. Marner, David Mitchell, Frank Percival Montgomery, Elizabeth Main Moore, Patrick Joseph Murnane, William Napier, Jeremiah O'Kane, Matthew Fergus O'Kane, Annie Martin Orr, Charlotte Pedlow, William Henry Pedlow, Margaret Sloane Purce, Robert James Rea, James Alexander Ritchie, William Saunderson, John Scott, Mary Georgina Thompson, Ernest Sydney George Killen Vance, John Hazlett Vance, Donald Reid Wheeler, Charles Alexander Whitfield, Frederick Hamilton Whyte, John Wilson, and Francis Purcell Woods.

Botany.—Joseph Adams, George Vance Allen, William Bryars, Alfred George Campbell, George Chesney, Neville Walton Clarke, Charles Davey Crawford, John Harold Davison, Alfred Charles Dickey, John Dunlop, Grace Marion English, Eli Freeman, Andrew Gaston, Hugh Edwin Hall, James Austin Harbison, James Hugh Bryson Hogg, Stanley M'Clure Kirk, Arabella Crory Kirker, Robert Neil Ballagh M'Cord, Nathaniel M'Cullagh, Joseph Patrick M'Ginley, Michael M'Menamin, Frederick M'Sorley, Patrick J. M'Sorley, Hugh Edward Magee, John Joseph Marner, Thomas J. Marner, Rupert Gribbon Meyer, David Mitchell, Elizabeth Main Moore, William Napier, Jeremiah O'Kane, Charlotte Pedlow, William Henry Pedlow, Margaret Sloane Purce, Robert James Rea, William Saunderson, Mary Georgina Thompson, Ernest Sydney George Killen Vance, John Hazlett Vance, Donald Reid Wheeler, Charles Alexander Whitfield, Frederick Hamilton Whyte, John Wilson, and Francis Purcell Woods.

SECOND MEDICAL EXAMINATION.

John Bradbury Alexander, Edwin George Bleakley Calvin, Patrick Clarke, Thomas William Edward Elliott, Mary Alice Gallagher, Henry Dampier Graves, Samuel John Hutchinson, Patrick Kane, Mary Margaret Keirns, Thomas M'Clurkin, Robert Gerald M'Elney, James Clarke M'Millan, Hugh Francis M'Nally, Sylvia Marsh, John Francis Meenan, Thomas Milling, Samuel Alexander Delmege Montgomery, William Noel Montgomery, Abraham Porter, Frederick Alexander Ethelbert Silcock, William Archibald Thompson, Elizabeth Stephenson Walker, and Denis Kevin Watterson.

Anatomy.—Albert William Bourke and William Russell.

Physiology.—John Culleman.

THIRD MEDICAL EXAMINATION.

Nathaniel Beattie, William M'Meekin Chesney, John Duffin, Archibald Fullerton, David Gaston, Margaret Gorman, William Stevenson Brown Hay, Joseph Ferris Dysart Hunter, William James Lascelles, Beattie Lyons, Campbell M'Neill M'Cormack, William M'Kim Herbert M'Cullagh, Frederick M'Kibbin, Robert Noel M'Kinstry, Edward Brice Cooper Nayrs, James Joseph Murray, Malachy Gerald Paul, George Raphael Buick Purce, George Whitfield Rea, Elizabeth Montgomery Robb, James Tate, Owen Wilson, William Robert Ewing Wilson, and Peter Paul Wright.

Pathology, Medical Jurisprudence, and Hygiene.—Ribton Gore Blair, Henry Albert Gillespie, Thomas Grimson, George Edward Hull, William M'Dermott, and John Ignatius Murnane.

Pathology and Materia Medica.—Francis Lionel Percy Garnet Bennett and Edward Ulick M'William.

Medical Jurisprudence and Hygiene.—Robert Condy, Frank Joseph Devlin, William Walter Dickson, Edmond Doherty, Edward Crawford Trench Emerson, George Gordon, William Hastings Hardy, David Jamison, Thomas Barrington M'Kee, Robert Chichester M'Millan, Edward Aloysius Mallon, John Charles Robb, John S. Savage, Frederick Albert Leopold Shields, Frederick Gerald Smyth, John Kilpatrick Stewart, Robert Fowler Walker, John Warwick, and J. C. Wilson.

Materia Medica.—Henry Potter Hall and Vincent Magee.

M.B., B.CH., B.A.O. DEGREES.

David Russell Acheson, John Herd Beverland (second-class honours), Sarah Elizabeth Calwell, Samuel Howard Davison (second-class honours), Samuel Russel Foster (second-class honours), Thos. Fleming Stevenson Fulton, Cecil Lovette Gaussen, John M'Ilrath Gibson, Norman Bell Graham, Norman Clotworthy Graham, James Hill, Thomas Hugh Houston, James Taylor Kyle, James Lyons, Robert J. M'Connell, Richard M'Culloch, Henry Price Malcolm (first-class honours), Robert Marshall (second-class honours), Henry Holmes Mulholland, William M'Neill Walker, James Ross White, and William Oliver Wilson.

M.D. DEGREE.

By Examination.—Robert James Lyttle, John Moorecroft M'Cloy, and John James Alexander Gordon MacMurtry.

By Thesis.—James Alexander Brown, John Dodd, Victor George Leopold Fielden, William Hanna, Richard Heard, David James Jackson, Alan Kidd, Thomas James Simpson Moffet, and James William Albert Wilson.

DIPLOMA IN PUBLIC HEALTH.

George Shaw Glass, Leslie Charles Johnston, William Willis Dalziel Thomson, Robert Maxwell Trotter, and Bruce Alexander West.

SCHOLARSHIPS.

First Medical Scholarships.—William Bryars and Robert Neil Ballagh M'Cord (equal, £35), Alfred Charles Dickey and David Mitchell (equal, £20), and M. Georgina Thompson, Isabella Tod Memorial Scholarship.

Second Medical Scholarships.—Edwin George Bleakley Calvert, Scholarship, £40, and Juliet Symington Gold Medal in Anatomy; James Clarke M'Millan, 2nd Scholarship, £30; and Samuel John Hutchinson, Thomas Milling, and Elizabeth Stephenson Walker (equal), 3rd and 4th Scholarships (divided), £11 13*s.* 4*d.* each.

Third Medical Scholarships.—Archibald Fullerton, 1st Scholarship, £40; Edward Brice Cooper Mayrs, 2nd Scholarship, £30; William Stevenson Brown Hay, 3rd Scholarship, £20; and George Raphael Buick Purce, 4th Scholarship, £15.

Fourth Medical Scholarships.—Henry P. Malcolm, Special Scholarship of £20 and Scholarship in Surgery, £30; Robert Marshall, Scholarship in Medicine, £30; and John H. Beverland, Scholarship in Midwifery, £30.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Th. S. Flatau, who has been for some years lecturer to the Musical Academy on Voice Production, has been appointed Chief of a Department for Ear Disease in the Charité, and has been granted the title of Professor in the Medical Faculty of the University; Dr. Jacob Katzenstein, of the Aural and Throat Clinic of the Charité, has been granted the title of Professor.—*Breslau:* Dr. Georg Lenz, first assistant in the University Ophthalmic Clinic, has been granted the title of Professor.—*Berne:* Dr. Sophie Getzowa has been recognised as *privat-docent* of Pathological Anatomy.—*Genoa:* Dr. Giuseppe Ovio, professor in the Modena Medical School, has been appointed to the chair of Clinical Ophthalmology.—*Giessen:* Dr. R. Jaschke has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Gratz:* Dr. Rudolf Matzenauer, extraordinary professor of Dermatology, has been promoted to be Ordinary Professor.—*Guatemala:* Dr. E. Soza has been appointed Professor of General Pathology; Dr. Arroyo Professor of Urology; Dr. J. Sanchez Professor of Midwifery; Dr. J. Bianchi Professor of Therapeutics, and Dr. M. J. Wunderlich Professor of Anatomy.—*Halle:* Dr. Gustav Willige, assistant in the Clinic for Mental and Nervous Diseases, has been promoted to be Chief Physician of the Clinic.—*Königsberg:* Dr. E. Gaupp, of Freiburg, has been offered the chair of Anatomy in succession to Dr. Stieda.—*Lemberg:* Dr. Theodor Bohosiewicz, *privat-docent* of Stomatology and Odontology, has been promoted to be Extraordinary Professor.—*Marburg:* Dr. Zeissler has been appointed Principal of Department in the Institute for Hygiene and Experimental Therapeutics.—*Strasburg:* Dr. August Tilp has been recognised as *privat-docent* of Pathological Anatomy.—*Tübingen:* Dr. H. Stoll has been recognised as *privat-docent* of Forensic Medicine.—*Vienna:* Dr. Ernst Pick, Adjunct in the Sero-therapeutic Institute, has been promoted to be Extraordinary Professor.—*Würzburg:* Dr. Paul Vonwiller, of Geneva, has been offered the Prosectorship of Histology and Embryology in the Anatomical Institute.

DONATIONS AND BEQUESTS.—By the will of the late Mr. George Binns, the Sheffield Royal Infirmary will receive £300, the Sheffield Royal Hospital £300, the Jessop Hospital for Women £200, and the Children's Hospital, Sheffield, £50.—A bequest of £1000 has been received by the Council of the Manchester University under the will of the late Dr. J. Dixon Mann. The money will be added to the special fund for the encouragement of medical research

in the University.—The Clark Trustees have given a donation of £500 to the Aberdeen Maternity Hospital and £250 to the Aberdeen Dispensary, towards clearing off the debt on these institutions.

THE Princess Louise, Duchess of Argyll, with the Duke of Argyll, on July 22nd, distributed the prizes to the children from the Paddington and Kensington Dispensary for the Prevention of Tuberculosis at the Kensal House School, Harrow-road. The school, which is conducted on the open-air plan, admits between 80 and 100 children of consumptive tendency.

A MEMORIAL TO LISTER.—The Presidents of the Royal Society and of the Royal College of Surgeons of England some weeks ago took the necessary steps for the formation of a large and representative committee for the purpose of establishing a memorial to the late Lord Lister. This committee, which is a thoroughly important one, having representatives upon it of many foreign Governments, learned societies, universities, scientific institutions, medical schools, and great municipalities, met on Monday last at the rooms of the Royal Society, under the chairmanship of Sir Archibald Geikie. The following members were present: The Portuguese Minister, the Master of the Rolls, the Dean of Westminster, the Lord Provost of Glasgow, Viscount Iveagh, Sir Donald MacAlister (President of the General Medical Council), Sir Thomas Barlow (President of the Royal College of Physicians of London), Sir Rickman J. Godlee (President of the Royal College of Surgeons of England), Dr. J. A. Adams (President of the Royal Faculty of Physicians and Surgeons, Glasgow), Sir Henry Morris (President of the Royal Society of Medicine), Sir John Tweedy (Medical Society of London), Professor A. Crum Brown (Royal Society of Edinburgh), Professor E. B. Poulton (President of the Linnean Society), Sir William Osler (University of Oxford), Professor W. Thorburn (University of Manchester), Mr. Dennis J. Coffey (National University of Ireland), Sir Joseph Dimsdale (Master of the Grocers' Company), Mr. F. M. Fry (Merchant Taylors' Company), Mr. D'Arcy Power (St. Bartholomew's Hospital), Mr. W. Hale White (Guy's Hospital), Hon. W. F. D. Smith (King's College Hospital), Sir Frederic Eve (London Hospital), Sir Douglas Powell, Sir W. Watson Cheyne, Admiral Sir John Durnford, Surgeon-General Sir A. M. Branfoot, Sir John Rose Bradford, Lieutenant-Colonel Sir D. Prain, Sir James Dewar, Sir Alfred Kempe, Mr. A. E. Maylard, Professor R. Meldola, Mr. Edmund Owen, and Mr. John S. Samuel. Numerous letters of regret having been read, on the motion of Sir Joseph Dimsdale, seconded by Sir Douglas Powell, the following were appointed an executive committee to recommend to a future meeting of the general committee a scheme for the memorial to Lord Lister and to organise an appeal for subscriptions: The Archbishop of Canterbury, Viscount Haldane (the Lord Chancellor), Viscount Iveagh, Lord Rayleigh, Lord Rothschild, Lord Alverstone (Lord Chief Justice), the Dean of Westminster (Bishop Ryle), the Lord Mayor of London (Sir T. B. Crosby), the Lord Provost of Edinburgh (Sir W. Brown), the Lord Provost of Glasgow (Mr. D. M. Stevenson), Sir H. H. Cozens-Hardy (Master of the Rolls), the Right Hon. Lewis Harcourt, M.P., Sir Archibald Geikie, K.C.B. (President of the Royal Society), Sir Thomas Barlow, Sir W. Watson Cheyne, Sir Rickman J. Godlee, Sir Henry Morris, Sir Donald MacAlister, Sir Charles Parsons, Sir William Turner, Sir J. Wolfe Barry, Sir John Rose Bradford, Sir Alfred Pearce Gould, Sir Alfred Kempe, the Hon. W. F. D. Smith, Mr. Frederick Morris Fry, and Mr. Edmund Owen. On the motion of Sir Donald MacAlister, seconded by Sir James Dewar, the Right Hon. Lord Rothschild and Sir W. Watson Cheyne were appointed treasurers, and Sir John Rose Bradford was appointed secretary of the Lister Memorial Committee. A meeting of the executive committee was held later, at which proposals for a memorial of an international character were considered. Arrangements were made for a public meeting in furtherance of the objects of the memorial to be held at the Mansion House in October, at which details of the scheme will be announced. Communications for the treasurers or the secretary may be addressed to the Royal Society, Burlington House, London, W.

THE Chelsea Hospital for Women has received from the Grocers' Company a donation of £100 to its rebuilding fund.

Mr. V. C. Pennell has been awarded the University scholarship of £50 at St. Thomas's Hospital Medical School.

THE RESEARCH HOSPITAL, CAMBRIDGE.—A medical friend of Mr. Strangeways who wishes to remain anonymous has offered to give £150 a year for a period of three years for a Research Scholarship at the Research Hospital. All details of this generous endowment will be given by Mr. Strangeways to any qualified man who wishes for them. The scholar appointed will be expected to begin work in October.

"RED CROSS" TRANSFERRED TO "TURKISH CRESCENT."—The expedition sent by the German Red Cross Society at the beginning of this year to the seat of war in Tripoli has now (after months' work with the sick and wounded of the Turkish army) been recalled. The whole installation in the hospital and dispensary at Gharian has been taken over by the "Turkish Crescent," which corresponds to the Red Cross societies of Christian countries.

CROYDON HOSPITAL.—The Mayor of Croydon, Alderman Trumble, opened the new wing of Croydon Hospital, erected at a cost of £5500, as a memorial to King Edward VII. from designs by Mr. Frank Windsor. It contains an isolation department, an 18 cot ward, nurses' quarters, and kitchen. Of the sum required £4000 were raised by public subscription. An offer of £1000 was announced by the chairman to be paid when the remaining £500 were collected. £250 of this were promised during the afternoon.

THE INTERNATIONAL EUGENICS CONGRESS: INAUGURAL BANQUET.

THE International Eugenics Congress, which is sitting this week in London, was inaugurated on Wednesday evening, July 24th, by a banquet held in the Victoria Hall of the Hotel Cecil, Strand, London, W.C. Major Leonard Darwin, the President of the Congress, was in the chair, and was supported by an influential assembly. Covers were laid for some 400 members of the Congress, and there were present representatives from the United States, India, Canada, France, Germany, Italy, Spain, Greece, Norway, and Japan.

After the toast of "The King" and the other loyal toasts had been honoured, Mr. A. J. BALFOUR, who was greeted enthusiastically on rising, proposed "Welcome to Our Guests from Abroad," and in a felicitous speech pointed out the importance of the subject of eugenics, adding that the problems that would be discussed at the first International Congress would have to be considered and faced by every civilised country. Eugenics, he said, considered the health, character, and qualities of succeeding generations, and sooner or later the questions arising out of such studies must engage the attention of every thoughtful person. He pointed out seriously, but humorously, that the doctrine of the survival of the fittest did not imply that what survived was by any means "fit," and said that the true eugenist must have the courage of his opinions and regard man as he is now, that is, as a wild animal to be domesticated by such congresses as the present one.

M. PAUL DOUMER, delegate from the Académie des Sciences, responded by congratulating England upon having paid such serious attention to the problems involved in racial study.

The Lord Mayor of London, Sir THOMAS CROSBY, then proposed the toast of "The Eugenic Ideal," and dwelt on the importance of health education in the interests of the next generation. Eugenics, he said, must be taught in the cottage as in more opulent homes, and the tragedy of youthful marriages between young and unfit persons made much more rare.

In the absence of Professor Ploetz (President of the International Society for Race Hygiene), General H. E. VON BARDELEBEN replied.

"Success to the Congress" was proposed by Professor

VAN WAGENEN (American Eugenics Section), who said that the number of eugenists in America was being constantly augmented. Everyone owed a debt of gratitude to the President and honorary secretary of the Eugenics Education Society of Great Britain, for organising the Congress in which more than 600 members had been enrolled.

In his reply, the PRESIDENT, after warmly welcoming the guests, said that the science of eugenics was young, that conditions in different countries varied greatly, and that the laying down of extensive and very definite programmes of reform suitable for all could not be expected to form part of their proceedings. Their main aim should for the present be to make the meaning of the word "eugenics" more widely known and to show that their aims were as practical as those of politicians, or more so, inasmuch as politicians looked mainly to immediate results and the consequent votes obtained. He hoped that this would be the first of a long series of congresses.

At the conclusion of the banquet a reception was held, at which the members and associates were introduced to the President and foreign delegates.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Mental Deficiency Bill.

By a majority of 242 votes to 19 the House of Commons has passed the second reading of the Mental Deficiency Bill. In the course of the debate on Friday, July 19th, a certain amount of opposition to the Bill as a whole was revealed, and there was also a tendency on the part of some speakers who assented to its principles to scrutinise critically some of the details of the measure. Mr. WEDGWOOD, who moved the rejection of the Bill, objected to its compulsory character. He and other speakers took exception to the definition of mental defectives in Clause 17, urging that a provision which included as feeble-minded "persons who were incapable of managing themselves and their affairs with ordinary prudence" was much too wide. Mr. ELLIS GRIFFITH, the Under Secretary of State for the Home Department, replying for the Government, defended the compulsory character of the Bill, and contended that precautions to prevent abuse were provided in it.

Feeble-minded Persons (Control) Bill.

The Feeble-minded Persons (Control) Bill, which was introduced in the House of Commons by Mr. STEWART this session, has passed through a Standing Committee and been reported to the House with amendments.

Experiments on Living Animals.

The return showing the number of experiments on living animals during the year 1911 under licences has been presented to the House of Commons. The report for England and Scotland is made by Professor G. D. THANE. The total number of licensees was 562, of whom 135 performed no experiments. Various particulars are tabulated. Table IV. is divided into two parts, A. and B., for the purpose of separating experiments which were performed without anæsthetics from experiments in which anæsthetics were used. The total number of experiments included in Table IV. (A.) is 5090. Of these there were performed:—

Under Licence alone	2,808
,, Certificate C.	215
,, Certificate B.	1,674
,, Certificate B. + EE.	393

Table IV. (B.) is devoted entirely to inoculations, hypodermic injections, and some few other proceedings, performed without anæsthetics. It includes 90,113 experiments, whereof there were performed:—

Under Certificate A.	89,515
,, Certificate A. + E.	452
,, Certificate A. + F.	146

The total number of experiments is 95,203, being 528 less than in 1910; the number of experiments included in Table IV. (A.) shows an increase of 151, and that in Table IV. (B.) a decrease of 679.

All experiments involving a serious operation are placed in Table IV. (A.). The larger part of the experiments included in this table, viz., all performed under licence alone and under Certificate C., 3023 in number, come under the provision of the Act that the animal must be kept under an anæsthetic during the whole of the experiment, and must, if the pain is likely to continue after the effect of the anæsthetic has ceased, or if any serious injury has been inflicted on the animal, be killed before it recovers from the influence of the anæsthetic.

The experiments included in Table IV. (B.), 90,113 in number, are, as Professor Thane goes on to mention, all performed without anæsthetics. They are mostly inoculations, but a few are feeding experiments, or the administration of various substances by the mouth or by inhalation, or the abstraction of blood by puncture or simple venesection. In no instance has a certificate dispensing with the use of anæsthetics been allowed for an experiment involving a serious operation. Inoculations into deep parts, involving a preliminary incision in order to expose the part into which the inoculation is to be made, are required to be performed under anæsthetics, and are therefore placed in Table IV. (A.).

The returns show that during the year 1911 41,025 experiments were performed by 21 licensees, working at nine institutions, in the course of cancer investigations. Of these, 835 are in Table IV. (A.) and 40,190 in Table IV. (B.). The latter are almost entirely inoculations into mice.

A large number of experiments, almost wholly simple inoculations and similar proceedings contained in Table IV. (B.) were performed either on behalf of official bodies, with a view to the preservation of the public health, or directly for the diagnosis and treatment of disease. Several county councils and municipal corporations have their own laboratories in which bacteriological investigations are carried on, including the necessary tests on living animals; and many others have arrangements by which similar observations are made on their behalf in the laboratories of universities, colleges, and other institutions. A sewage farm is registered as a place in which experiments on living animals may be performed in order that the character of the effluent may be tested by its effects on the health of fish. The Local Government Board and the Board of Agriculture and Fisheries have laboratories which are registered for the performance of experiments having for their object the detection, prevention, and study of diseases of man and animals. In other places experiments have been performed, on behalf of the Home Office, the Naval Medical Service, the War Office, the Army Medical Department the Army Medical Advisory Board, the Army Veterinary Service, the General Post Office, the Local Government Board, the Metropolitan Asylums Board, the Advisory Committee for Plague in India, the Tropical Diseases and Glass-blowers Cataract Committees of the Royal Society.

Seventy-nine licensees report over 21,000 experiments which were performed for Government departments, county councils, municipal corporations, or other public health authorities; and 16 licensees performed nearly 13,000 experiments for the preparation and testing of antitoxic sera and vaccines, and for the testing and standardising of drugs.

The report for Ireland is made by the late Sir W. THORNLEY STOKER. He states that 22 licences were in force during the year. The experiments performed were 278 in number. The inspector reports that the principal experiments were: investigations of the gases of blood and blood pressure; the movements of respiration, functions of heart, and nervous control of heart; hæmolytic experiments; nervous and chemical control of digestive glands; study of calf vaccine lymph; medico-legal investigations; the intravenous injection of drugs in disease; the study of the tubercle and diphtheria bacillus; investigations of the action of adrenalin, peptine, and ethyl chloride; experiments on preparation of immune sera and testing virulence of typhoid. Useful work was accomplished in regard to the study of pathology of diseases of the lower animals. The inspector adds that, in his opinion, the work was done sincerely and with the best intention.

The Select Committee on Patent Medicines.

The Select Committee of the House of Commons on Patent Medicines held a meeting on Tuesday, July 23rd. Sir HENRY NORMAN was in the chair. The evidence was non-medical.

Colonel EVERITT, the honorary secretary of the White Cross League, stated the views of that organisation in regard to improper advertisements. He was anxious that they should be suppressed and steps taken to put down such practices as the prevention of conception.

Mr. C. H. KIRBY, solicitor to the Chemists' Defence Association, gave evidence as to the law and practice governing the levying of stamp duties on patent medicines. The law, which was to a large extent based upon a statute of 1812, presented a good many anomalies. When the name of an ailment was used for the description of the medicine, it became liable for duty. The Commissioners of Inland Revenue did not regard a medicine bearing merely the name of the part of the body to which it was to be applied as liable to stamp duty. However, it was liable if the name indicated the action of the medicine. A "cough-mixture" was liable, but a "throat mixture" or "chest mixture" was not liable.

The Committee adjourned.

HOUSE OF COMMONS.

WEDNESDAY, JULY 17TH.

Sanatorium Benefit in Wiltshire.

Mr. GODFREY LOCKER LAMPSON asked the Secretary to the Treasury how many persons had been notified in Wiltshire as suffering from tuberculosis, and how many of these persons was it estimated would become insured persons under the Insurance Act; and also what was the estimated number of insured persons in Wiltshire for whom sanatorium benefit would be able to be provided for the first six months commencing July 15th, 1912.—Mr. MASTERMAN said in reply: I have caused local inquiry to be made and will communicate with the honourable Member as soon as I have obtained the information which he desires.

Medical Attendance under the German Insurance Law.

Mr. WATT asked the Secretary to the Treasury whether he could say what was the figure per head of insured persons paid to medical attendants under the German Insurance Law, and whether that sum included drugs or not.—Mr. MASTERMAN replied: I am informed that the average cost to the German Sickness Insurance Societies of medical attendance, exclusive of medicine, was, in 1910, 5s. 10½d. per member. These charges include in some cases the treatment of dependents as well as of insured persons.

Mr. WORTHINGTON-EVANS: Can the right honourable gentleman say what was the cost of the drugs?

Mr. MASTERMAN: I will if the honourable gentleman will give notice.

Mr. LYNCH: Is it not impossible to form a fair comparison unless we know the difference in status, &c., between the English and the German medical man?

Mr. MASTERMAN: I agree that the bare mention of figures as between the German and the English system would not be satisfactory.

Sanatorium Benefit and Supplies of Cod-liver Oil.

Mr. FELL asked the Secretary to the Treasury whether insured persons suffering from tuberculosis could now obtain supplies of cod-liver oil, and if so, to whom should application be made; and would this benefit be given to Post Office contributors who could not get accepted by an approved society.—Mr. MASTERMAN answered: An insured person suffering from tuberculosis should apply to the Local Insurance Committee who will arrange for treatment suitable to his condition. Sanatorium benefit is not limited to members of approved societies, but can be given by the Local Insurance Committees to any persons insured under the Act.

Midwives and the Insurance Act.

Mr. ROWNTREE asked the Secretary to the Treasury whether under the National Insurance Act a midwife must be insured whilst she was in attendance on a maternity case.—Mr. MASTERMAN said in reply: The Commissioners are advised that a midwife who undertakes a case on her own account, without any understanding that she shall work under a medical man, is not employed under contract of service. In these circumstances she need not be insured.

The Site of the University of London.

Mr. NORMAN CRAIG asked the Prime Minister whether any communications had been made to the Senate of the University of London by the Government or by the Royal Commission on University Education in London in regard to the scheme for acquiring the Bedford estate site prior to Lord Haldane informing the University that the promised funds were no longer available for that purpose; with whom the responsibility for the delay that had prejudicially affected the appointment of the trustees and the acquisition of the site rested; and whether he would lay the correspondence with the University upon the table.—Mr. ASQUITH wrote in reply: The answer to the first part of the question is in the negative. Neither the Government nor the Royal Commission had taken any steps in connexion with the scheme for acquiring the Bedford estate site. I cannot answer the second part of the question, which should be addressed to the parties concerned. There is no correspondence on the matter in the possession of the Government.

Industrial Diseases.

The House went into Committee of Supply, Mr. WHITLEY in the chair, and considered the vote for salaries and expenses at the Home Office.

Mr. GILL raised various questions as to industrial accidents, and urged that further steps should be taken to secure the purity of air in cotton mills.

Mr. HILLS drew attention to the subject of lead poisoning in the Potteries, and described the deplorable effects of the disease. In 1896 the first real attempt, he said, was made to grapple with it, and the result was that in four years from 1896 to 1900 the number of cases was reduced from 400 a year to under 100 a year. That showed that it was quite possible to tackle this evil. From 1900 to the present year there had been practically no decline at all. From 1900 to 1909 the cases averaged 90 a year, ranging from 117 to 58. In 1909 they were 58, and in 1910 they were 77. In 1911 they were 92, and in the first half of 1912 they were 41. It was surely quite clear from those figures that a dead level of cases had been reached. He drew attention to the delay which had occurred in bringing into operation the recommendations of the Departmental Committee of 1910, which dealt with lead poisoning. Lead poisoning was a preventable evil. In September of this year there would meet at Zürich an international congress to discuss various questions of industrial legislation, and amongst them the question of lead poisoning. He did not believe that this question could be settled by purely internal action. He believed that, following the procedure which had been adopted in the match trade, it was necessary to prohibit absolutely all over the world the use of lead glaze, or at any rate its use in certain articles.

Mr. NOEL BUXTON complained of the delay which had occurred in regard to the adoption of the rules for the prevention of lead poisoning.

Mr. ALBERT SMITH drew attention to the transmission of disease owing to the practice of "shuttle-kissing" by weavers in Lancashire.

Mr. JOWETT spoke of the necessity of taking further precautions to protect wool-combers from anthrax. Much had been done by regulation for the wool-sorter, and he did not see why something further should not be done for the wool-comber.

Mr. MCKENNA (the Home Secretary), replying to the various subjects raised in the debate, said that the case for dealing with lead poisoning was complete and the Home Office had never disputed it. The facts, so far as he could arrive at them, were these. The Departmental Committee on Lead Poisoning reported in the autumn of 1910 as to the steps which could be taken to prevent lead poisoning in potteries. Sir Ernest Hatch was chairman. The committee decided not to recommend the prohibition of the use of lead. They did recommend, however, an extensive and elaborate code of rules dealing with every detail of the manufacture. This code of rules was only drawn up in draft. The manufacturers raised many objections in detail to the code. The Home Office heard the representations of the manufacturers and sent their observations to Sir Ernest Hatch, who, after consulting the members of the former committee, recommended certain modifications. The rules were then issued in draft. According to the provisions of the Act, after rules had been issued in draft, objection might be raised to them. It was apprehended that no objections would have been made by the employers, but grave objections were raised, and under the Act the Home Office was bound to consider them. The settling of the rules ought not to have taken so long as it did, but unfortunately Sir Ernest Hatch, who had the whole matter in hand, was greatly occupied in other Government works, and also had the misfortune to fall ill. Many months were lost in consequence of these two facts. He anticipated on the assurance of Sir Ernest Hatch that agreement on the rules was now in sight, and that he hoped to report in a few weeks.

Mr. J. WARD: Will the decision, then, be final on the subject, or is it the case that when the rules are in draft the employers may still object and carry on this inquiry until the end of time?

Mr. MCKENNA: No, this is the final draft. Upon the report of Sir Ernest Hatch we shall be able to issue the rules. The Departmental Committee, the right honourable gentleman went on to say, had proceeded upon the principle of controlling the use of lead by regulation and not by prohibition. Until the result of its recommendations had been seen and until it was known from experience whether they were effective or not, the Home Office could not at the present moment abandon the whole of the committee's work and proceed by prohibition.

Mr. HILLS: How long is it intended to wait after those regulations are enforced?

Mr. MCKENNA: I think we shall probably get evidence very quickly. If the regulations were not effective in stopping lead poisoning there would clearly be a case for considering other means, but the committee did not recommend the other means which had suggested themselves to some honourable Members. In regard to weight-carriers certain instructions had been given to certifying surgeons, and the number of rejections of young persons who had to serve in cases where the work involved heavy weight carrying had greatly increased. The right honourable gentleman also made an allusion to the subject of anthrax. He said that special inquiries by two inspectors were now being made into the question of the improved methods of dust extraction in wool-combing as well as in wool-sorting. A report had already been received on the general subject, and on wool-combing a report ought to be received in a few months. He agreed that the mere omission of the stage of wool-sorting ought not to be allowed to give freedom for the introduction of that foreign disease of anthrax which would be avoided if the old invariable practice of wool-sorting or combing had been continued. Certainly the attention of the Home Office would be directed to the subject. The Home Office would certainly do its utmost to secure as great freedom from anthrax for wool-combers as it had been able to secure for wool-sorters. He hoped that that was a satisfactory answer.

After further discussion

Mr. ELLIS GRIFFITH (Under Secretary of State for the Home Department) said that the question of "shuttle-kissing" had been considered by a committee. That committee found: "When the practice is considered from the medical and public health aspect, it is noteworthy that although there are, and have been for generations, hundreds and thousands of looms running in Lancashire, only five instances of alleged infection have been brought to our notice by medical officers of health, and that under personal investigation in not one instance was it possible to bring home to 'shuttle-kissing' the transmission of disease."

Mr. A. SMITH: May I point out that there was no actual or systematic action on behalf of the medical officers to trace the cause of a disease back to "shuttle-kissing." The report of the committee confirms our idea in the matter.

Mr. ELLIS GRIFFITH: The real point to which the honourable Member directed my attention was as to whether anything could be done at present in this direction. On the question of the administration the committee reported: "We think that the case is fairly summed up in a resolution passed at a meeting of the North-Western Branch of the Society of Officers of Health to the following effect: 'That this branch is of opinion that the habit of "shuttle-kissing," common in many districts in Lancashire, is objectionable and potentially dangerous to health, and thinks it desirable that means be taken by which the continuance of this practice may be rendered unnecessary.'" The Home Office, through its inspectors, was taking every possible precaution in this matter. It would be very glad to help in any way it could to substitute a new shuttle for the one at present in use. The Home Office had come to the conclusion, the honourable gentleman mentioned, that there was not yet sufficient accumulated experience of the Workmen's Compensation Act of 1906 at its disposal in order to make a general inquiry into its operation.

Mr. C. DUNCAN urged that medical specialists should be appointed to diagnose cases of lead poisoning for the purposes of the Workmen's Compensation Act. These specialists should be entirely under the control of the Home Office and should not be employed by any of those who were parties to the dispute in the cases which occurred.

The vote was afterwards carried.

THURSDAY, JULY 18TH.

Institutions for Tuberculous Patients.

Replying to Mr. HIGHAM, Mr. MASTERMAN (Secretary to the Treasury) gave a list of about 220 residential institutions in England and Scotland in which tuberculous patients could be, and were being, treated.

FRIDAY, JULY 19TH.

Sanatorium Benefit in Wiltshire.

Mr. GODFREY LOCKER LAMPSON asked the Secretary to the Treasury whether it was estimated that there would be any difference in Wiltshire during the first year of the operation of the National Insurance Act between the amount for sanatorium benefit provided for under the Act and the amount which would actually be allocated to Wiltshire according to the Memorandum No. 112, I.C., recently issued by the Insurance Commissioners; and, if so, whether it was estimated that the actual amount to be allocated to Wiltshire would be less than that provided for under the Act.—Mr. MASTERMAN said in reply: The Act does not provide for any definite allocation of funds for sanatorium benefit for the period from July 15th to the end of the present year, to which alone the allocation proposed in the memorandum applies. The allocation for the first full year after the commencement of the Act will be made in January next in accordance with the provisions of Sections 16 and 61.

MR. GODFREY LOCKER LAMPSON: Will there be sufficient money between now and the end of the year to provide sanatoria?

MR. MASTERMAN: Yes. £220,000 were set aside up to November, and if more is required more will be set aside.

MONDAY, JULY 22ND.

Medical Payments of Friendly Societies.

MR. W. PEEL asked the Secretary to the Treasury whether he could give the names of any well-known Friendly Societies operating in country districts who paid 4s. per head for medical attendance.—MR. MASTERMAN replied: The usual payment by the Friendly Societies is something like 4s. a head. Of the two largest Friendly Societies I am informed that in the majority of cases the lodges of the Manchester Unity of Oddfellows pay 4s. a head for medical attendance and medicine in the country districts, and this is also a common figure for similar work in the case of the branches of the Ancient Order of Foresters. I believe that most of the other great affiliated orders pay a similar amount per member.

Medical Men and Insurance Committees.

MR. WILLIAM PEEL asked the Secretary to the Treasury whether he would state how many doctors in England and Wales had become members of provisional Insurance Committees, and how many had undertaken the examination of patients for sanatorium benefits, and what was the estimated number necessary to perform these duties adequately.—MR. MASTERMAN answered: The number of medical men who are at present members of the Insurance Committees as provisionally constituted in England and Wales is 100. The examination of patients for sanatorium benefit will be effected by the patient's ordinary medical attendant, for which he will offer a fee, or by such officer as the Local Insurance Committee may arrange with the local authority to perform this work. I can give no estimate as to the number required to perform these duties, as this will depend entirely on the number of applications received and the nature of the scheme adopted by the Local Insurance Committee.

The Demands of the British Medical Association.

MR. CATHCART WASON asked the Secretary to the Treasury to re-state the six principal demands that were made by the British Medical Association; how far the Government had been able to meet them; and whether the only outstanding question was that of 8s. 6d. as against 6s.—MR. MASTERMAN said in reply: The six principal demands formulated by the British Medical Association while the Insurance Bill was before Parliament were added to at a meeting of the Association in February last. The complete demands were communicated by the Association to the joint committee of Insurance Commissioners in a letter dated Feb. 29th, and a reply was sent by the joint committee on June 26th. These letters will be presented to-day as a Parliamentary paper. The reply of the joint committee is now receiving the consideration of the Association, and pending such consideration it is impossible to say what points are outstanding. As regards remuneration, it will be seen on reference to the letter of Feb. 29th that the demand of the Association is not for 8s. 6d., as compared with the 6s. assumed in the original actuarial estimates, but for 8s. 6d. *plus* whatever sum may be found necessary for the provision of drugs and also for extra medical services the cost of which cannot precisely be estimated.

Sanatorium Benefit in Wiltshire.

MR. GODFREY LOCKER LAMPSON asked the President of the Local Government Board to state what would be the difference in Wiltshire between the amount for capital expenditure on sanatoria on the basis of population recommended by the Astor report and the amount that would actually be available for that purpose.—MR. BURNS answered: If sanatorium provision were made for Wiltshire on the basis recommended in the Astor report of one bed for every 5000 inhabitants it would amount to 57 or 58 beds. Adopting the estimate of cost of £150 per bed which is suggested in the Astor report, the total cost would amount to about £8600, and if a grant of three-fifths of this sum were given it would amount to £5160. The actual grant which may be made must depend upon various circumstances, amongst others, the capital expenditure required for other parts of a complete scheme—namely, the provision of dispensaries, hospitals, and separate institutions for children.

Tuberculous Dispensaries in Ireland.

SIR JOHN LONSDALE asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware that in connexion with the proposed tuberculous dispensary system the medical officers to be appointed were required to have the Diploma of Public Health, and that many of the present dispensary medical officers, although performing the duties of medical officers of health, did not possess this diploma and could not obtain it, except upon conditions which in many cases were impracticable; and whether, in these circumstances, he would endeavour to arrange that dispensary medical officers might be eligible for appointment as county tuberculosis officers, subject, in the absence of the Diploma of Health or a bacteriological certificate, to the successful candidates satisfying the Irish Local Government Board by examination as to their fitness for the position.—MR. BIRRELL wrote in reply: It is not proposed that the medical officers to be appointed in Ireland in connexion with the dispensary system referred to in the question shall be required to have a Diploma of Public Health.

The Notification of Births Act.

MR. CLYNES asked the President of the Local Government Board to state the names of the authorities that have adopted the Notification of Births Act; and the general result of the adoption of the Act.—MR. BURNS answered: The Act is now in operation in 295 sanitary areas, in addition to those within the county of London, and applies to a population of 18,430,191, or more than half of the total population of England and Wales. The reports of medical officers of health who have had experience of the operation of the Act indicate that it has led to a better knowledge and wider adoption of proper rules in regard to infant and child hygiene. I shall send to the honourable Member a list giving the names of the several authorities who have adopted the Act.

LORD ROBERT CECIL: May I ask whether the time has not arrived when this Act might be made compulsory on sanitary authorities?

MR. BURNS: We are considering that.

School Children and Measles.

MAJOR ANSTRUTHER GRAY asked the President of the Board of Education whether his attention had been called to a prosecution in North London before Mr. Hedderwick by which it appeared that it was usual to insist on children who had had measles returning to school in spite of the fact that other children in the same house were still ill of that disease; and, seeing that this must prove a common cause of epidemic, whether he would consider what steps he could take to remedy the evil without delay.—MR. J. A. PEASE replied: My attention has been called to the prosecution referred to. I am advised that there is no ground for believing that the practice of requiring the attendance at school of children who have had measles and come from houses where there are other children suffering from the disease is a common cause of the spread of infection. Though the exclusion of such children may be desirable as an additional precaution in exceptional cases of serious epidemic I am advised that it is not necessary in ordinary cases.

WEDNESDAY, JULY 24TH.

Medical Benefit in Germany.

MR. MASTERMAN (Secretary to the Treasury), in reply to MR. WORTHINGTON EVANS, said: I am having prepared a paper dealing with the cost of medical benefit in Germany, and the scope and nature of medical attendance and treatment there. The paper will give collections of agreements entered into by German medical men and their associations under the German scheme of sickness insurance and of the fees payable thereunder. No figures would be of any value without fuller explanations than could be included in an answer to a Parliamentary question.

BOOKS, ETC., RECEIVED.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. (Secretary: Charles G. Wagner, M.D., Binghamton State Hospital, Binghamton, N.Y.)
Proceedings of the American Medico-Psychological Association at the Sixty-seventh Annual Meeting held in Denver, Colo., June 19–22, 1911. Price not stated.

BAILLIÈRE, J. B., ET FILS, Paris.
Traité de la Rage. Par le Professeur Dr. Victor Babes, Directeur de l'Institut de Pathologie et de Bactériologie de Bucarest. Price Fr.16.

BERGER-LEVRAULT, LIBRAIRE MILITAIRE, Rue des Beaux-Arts, 5–7, Paris; Rue des Glacis, 18, Nancy.
Les Blessures de Guerre par les Armes Modernes et leur Traitement. Par le Docteur Th. Weiss, Médecin Principal de 2e Classe de l'Armée Territoriale, Professeur à la Faculté de Médecine de Nancy. Price Fr.3.

BERTHIER, O., LIBRAIRE, ÉMILE BOUGAULT, Successeur, 77, Boulevard Saint-Germain, Paris.
Les Médicaments en Clinique. Par le Dr. Scheffler, de Saint-Étienne. Price Fr.4.
Traitement de la Diphtérie. Par le Dr. Brelet, Ancien Interne des Hôpitaux de Paris, Professeur adjoint à l'École de Médecine de Nantes. Price Fr.1.

CHURCHILL, J. AND A., London.
Principles of Human Physiology. By Ernest H. Starling, M.D. Lond., F.R.C.P., F.R.S., Hon. M.D. Breslau, Jodrell Professor of Physiology in University College, London. Price 21s. net.

CLARENDON PRESS, Oxford.
John of Gaddesden and the Rosa Medicinæ. By H. P. Cholmeley, M.A., D.M. Price 8s. 6d. net.

DEUTICKE, FRANZ, Leipzig und Wien.
Die Gesundheitskontrolle durch den Organsinn. Für Gebildete verständlich dargestellt. Von Privatdozent Dr. Anton Brosch, k.u.k. Stabsarzt, ordentliches Mitglied des Militärsanitätskomitees, Lehrer an der Militärärztlichen Applikationsschule und Prosektor am Militärleichenhof in Wien. Unter Mitwirkung von Dr. Otto von Aufschnaiter, Chefarzt und Direktor der "Sanatorium und Kuranstalten Baden b. Wien A.G." Zweite, vermehrte Auflage. Price M.2, or K.2.40.

ENGELMANN, WILHELM, VERLAG VON, Leipzig.
Vorträge und Aufsätze über Entwicklungsmechanik der Organismen. Herausgegeben von Wilhelm Roux. Heft XVI. Die Bedeutung der Entwicklungsmechanischen Forschung für die Embryologie und Pathologie des Menschen. Von Alfred Fischel, Prag. Price, paper, M.2.40.

FISCHER, GUSTAV, Jena.
Allgemeine Biologie. Von Oscar Hertwig, Direktor des Anatomisch-Biologischen Instituts der Universität, Berlin. Vierte umgearbeitete und erweiterte Auflage. Price, paper, M.19.50; bound, M. 22.
Lungenchirurgie. Von C. Garré, Professor der Chirurgie an der Universität Bonn, und H. Quincke, em. professor der inneren Medizin an der Universität Kiel. Zweite Auflage. Price, paper, M.7.50; bound, M.8.50.
Das Asthma. Von Dr. Wolfgang Siegel, Bad Reichenhall. Price M.4.
Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein in Rostock. Zweiundzwanzigste Lieferung. Band I. Physiologie der Körpersäfte. Physiologie der Atmung. Zweite Hälfte. Bogen 1 bis 10. Price M.5.
Handbuch der Vergleichenden Physiologie. Herausgegeben von Hans Winterstein in Rostock. Dreiundzwanzigste Lieferung. Band I. Physiologie der Körpersäfte. Physiologie der Atmung. Erste Hälfte. Bogen 21 bis 29. Price M.5.
Vierundzwanzigste Lieferung. Band III. Physiologie des Energiewechsels. Physiologie des Formwechsels. Zweite Hälfte. Bogen 29 bis 39. Price M.5.

HERMANN, A., ET FILS, 6, Rue de la Sorbonne, Paris.

Questions Biologiques Actuelles. Collections de Monographies Publiée sous la direction de M. A. Dastre, Membre de l'Institut Louis Morel. Les Parathyroïdes. Price Fr.10.
J. Larguier des Bancels. Le Gout et l'Odorat. Price Fr.3.50.

HIRSCHWALD, AUGUST, Berlin.

Ueber den Ursprung der geistigen Fähigkeiten des Menschen. Von Berthold Kern. (Nach einem Vortrage, gehalten in der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte am 20 April, 1912.) Price M.1.60.

LANDER AND SON, Printers, Stationers, &c., Helston.

Stretcher Drill and Flag Signalling for Women. A Simple Manual of Stretcher Work and Flag Signalling for Women's Voluntary Aid Detachments. By Henry W. Spaight, Hon. Surg. and Supt., S.J.A.B., Assistant County Director, B.R.C.S., &c. Price 3*d*.

MALOINE, A., Paris.

Le Divorce des Aliénés. Par le Docteur Lucien-Graux, Lauréat de l'Institut, Membre de la Société de Médecine de Paris, Directeur de la Gazette Médicale de Paris. Price Fr.4.

MARHOLD, CARL, Halle a.S.

Polyzythämie und Plethora. Von Dr. Hans Hirschfeld, Berlin. (Sammlung Alb:1, IV. Band, Heft 2.) Price M.1.50

MASSON ET CIE, Paris.

Manuel des Maladies de la Nutrition. Sous la direction de MM. G.- M. Debove, Doyen honoraire de la Faculté de Médecine, Membre de l'Académie de Médecine, Ch. Achard, Professeur de Pathologie Générale à la Faculté de Médecine, et J. Castaigne, Professeur agrégé à la Faculté, Médecin des Hôpitaux. Par L. Babonneix, J. Castaigne, A. Gy et F. Rathery. Price F.20.
Nouveau Traité de Pathologie Générale. Publiée par Ch. Bouchard, Professeur honoraire de Pathologie Générale à la Faculté de Médecine, Membre de l'Académie des Sciences et de l'Académie de Médecine, et G. H. Roger, Professeur de Pathologie Expérimentale à la Faculté de Médecine, Membre de l'Académie de Médecine, Médecin de l'Hôtel-Dieu. Quatre Volumes. En souscription, Fr.88. Tome I. Redigé par MM. Achard, Bergonié, Cadiot, P. Courmont, Mathias Duval et Mulon, Imbert, Langlois, Le Gendre, Lejars, Le Noir, Nogier, Roger, Vuillemin.

MCGRAW-HILL BOOK COMPANY, 239, West 39th-street, New York. HILL PUBLISHING CO., LIMITED, 6 and 8, Bouverie-street, Fleet-street, London.

Sewage Disposal. By George W. Fuller, Consulting Engineer and Sanitary Expert, Member of the American Society of Civil Engineers, the American Institute of Consulting Engineers, the American Society of Mechanical Engineers, &c. Price 25*s*. net.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, New York.

Studies from the Rockefeller Institute for Medical Research Reprints. Volume XIV. Price not stated.

SAUNDERS, W. B., COMPANY, Philadelphia and London.

Infant Feeding. By Clifford G. Grulee, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College (in Affiliation with the University of Chicago). Price, cloth, 13*s*. net.
The Collected Works of Christian Fenger, M.D., 1840–1902. In two volumes. Price, cloth, 70*s*. net.
The Home Nurse's Handbook of Practical Nursing. By Charlotte A. Aikens, Formerly Director of Sibley Memorial Hospital, Washington, D.C. Price, cloth, 6*s*. 6*d*. net.
Sexual Impotence. By Victor G. Vecki, M.D., Consulting Genito-Urinary Surgeon to the Mount Zion Hospital, San Francisco. Fourth edition, enlarged. Price, cloth, 10*s*. 6*d*. net.
Surgical After-Treatment. A Manual of the Conduct of Surgical Convalescence. By L. R. G. Crandon, A.M., M.D., Assistant in Surgery at Harvard Medical School; and Albert Ehrenfried, A.B., M.D., Assistant in Anatomy at Harvard Medical School. Second edition, thoroughly revised. Price, cloth, 25*s*. net.

SPRINGER, JULIUS, Berlin.

Grundzüge der Pathologisch-histologischen Technik. Von Dr. Arthur Mülberger, M.R.C.S. Eng., L.R.C.P. Lond. Price, paper, M.2; bound, M.2.60.

STEINHEIL, G., Paris.

Travail du Laboratoire du Dr. Jeanselme, à l'Hôpital Broca. Les Anticorps syphilitiques. Essais de Sero-Agglutination de la Syphilis. Par le Docteur Albert Touraine, Interne Médaille d'Or des Hôpitaux de Paris. Price not stated.

SUPERINTENDENT GOVERNMENT PRINTING, INDIA, Calcutta.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Goverment of India. New Series. No. 50. Preliminary Report on an Investigation into the Etiology of Oriental Sore in Cambay. By Captain W. S. Patton, M.B., I.M.S., Offg. Director, King Institute of Preventive Medicine, Madras. Price 6 annas.

VOGEL, F. C. W., Leipzig.

Die Störungen der Sehfunktionen. Von Dr. med. W. Lohmann, Privat-dozent für Augenheilkunde, Oberarzt der Universitäts-Augenklinik München. Price, paper, M.10; bound, M.11.50.
Pathologische Anatomie des Ohres. Von Rudolf Panse, Dresden. Price, paper, M.12; bound, M.13.50.

YEAR BOOK PRESS, THE, 31, Museum-street, London, W.C.

The Girls' School Year Book (Public Schools). The Official Book of Reference of the Association of Head Mistresses. Seventh Year of Publication. 1912. Price 3*s*. 6*d*. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ARMOUR, DONALD, M.B., M.R.C.P. Lond., F.R.C.S. Eng., has been appointed Surgeon to the West London Hospital.
BARKER, L. E. H. R., M.B., B.S. Cantab., has been appointed School Medical Inspector under the Lancashire County Council.
BOYD, SIDNEY ARTHUR, M.S. Lond., F.R.C.S. Eng., has been appointed Surgeon to Out-patients at the Hampstead General and North-West London Hospital.
BROOK, ELIZABETH H., M.B., B.S. Edin., has been appointed School Medical Inspector under the Lancashire County Council.
DRYSDALE, J. H., M.B., B.C. Cantab., has been appointed Non-obstetric Physician to Queen Charlotte's Lying-in Hospital.
EDMOND, W. S., F.R.C.S. Eng., has been appointed Surgeon to X Ray Department of the Salop Infirmary.
GASH, T., M.B., B.S. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Snodland District of the county of Kent.
MACGREGOR, D., M.D. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Jedburgh District of the county of Roxburgh.
MAXWELL, R. D., M.D. Lond., has been appointed Physician to Inpatients at Queen Charlotte's Lying-in Hospital.
O'FLYNN, SARA, M.B., Ch.B., has been appointed Junior Obstetric Assistant to the Royal Free Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Second House Surgeon, unmarried. Salary £100 per annum, with apartments, board, and laundry.
BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board and laundry.
BIRMINGHAM UNIVERSITY.—Lecturer in Physiological Department. Salary £200 per annum.
BRIDGWATER HOSPITAL.—House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.
BRISTOL ROYAL INFIRMARY.—Resident Casualty Officer for six months. Salary at rate of £50 per annum, with board, apartments, and laundry.
BRIXTON DISPENSARY, Water-lane, S.W.—Resident Medical Officer, unmarried. Salary £175 per annum, with apartments, attendance, coal, and gas.
CARDIFF EDUCATION COMMITTEE.—Medical Assistant to School Medical Officer and Medical Officer of Health. Salary £250 per annum.
CARDIFF, KING EDWARD VII.'S HOSPITAL.—House Surgeon for six months. Salary £30, with board, residence, and laundry.
CHARING CROSS HOSPITAL.—Assistant Surgeon for Diseases of the Throat, Ear, and Nose.
CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board and washing.
COCKERMOUTH UNION.—Medical Officer of Workhouse at Cockermouth and of Cockermouth No. 2 District, Medical Superintendent of the Fever Hospital on Broughton Moor, and Medical Officer of Health for Rural District Council of Cockermouth. Salary £300 per annum guaranteed.
CROYDON GENERAL HOSPITAL.—Anæsthetist and Junior House Surgeon. Salary £75 per annum, with board, laundry, and residence.
DOWNPATRICK, DOWN DISTRICT LUNATIC ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £130 per annum, with apartments, board, washing, attendance, &c.
DUBLIN, ROYAL VICTORIA EYE AND EAR HOSPITAL.—Assistant Surgeon.
EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and washing.
GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.
GOVAN DISTRICT ASYLUM, Crookston, near Paisley.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, with rooms, board, attendance, and laundry.
HASTINGS, EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Salary at rate of £60 per annum, with residence, board, and washing.
HULL ROYAL INFIRMARY.—Assistant House Surgeon. Salary at rate of £60 per annum for six months, or £80 per annum for twelve months, with board and lodging.
KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, London, S.W.—Resident Medical Officer. Salary at rate of £75 per annum, with board and laundry.
KENT INSURANCE COMMITTEE.—Tuberculosis Medical Officer. Salary at rate of £500 per annum and travelling allowance.
LEEDS GENERAL INFIRMARY.—Obstetric Officer. Salary £50 per annum, with board, residence, and laundry. Also House Physician. Board, residence, and laundry provided. Also Medical Officer at Ida and Robert Arthington Hospital. Salary £80 per annum, with board, residence, and laundry.
LEEDS HOSPITAL FOR WOMEN AND CHILDREN.—Two House Surgeons for six months. Salary at rate of £50 per annum, with board.
LEEDS UNIVERSITY, FACULTY OF MEDICINE.—Research Assistant for the Department of Pathology. Salary £125 per annum.

LEICESTER ROYAL INFIRMARY.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

LIVERPOOL CITY INFECTIOUS DISEASES HOSPITAL.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

LURGAN UNION WORKHOUSE AND FEVER HOSPITAL, Ireland.—Resident Medical Officer (female). Salary £80 per annum, with apartments, laundry, and rations.

MACCLESFIELD GENERAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board and residence.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Honorary Clinical Pathologist.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with residence, board, and washing.

MERTHYR TYDFIL UNION WORKHOUSE.—Assistant Medical Officer. Salary £150 per annum, with apartments, rations, laundry, and attendance.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Resident Medical Officer. Salary £200 per annum, with board and residence.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160 per annum, with apartments, attendance, light, and fuel.

NOTTINGHAM GENERAL HOSPITAL.—House Surgeon. Salary £120 per annum, with board, residence, and washing.

PORTSMOUTH BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Physician to Out-patients.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, London, E.C.—House Physician for six months. Salary at rate of £80 per annum, with board, lodging, and washing. Also Medical Officer for Prevention of Consumption Department. Salary £250 per annum.

ROYAL NAVAL MEDICAL SERVICE.—Fifteen appointments.

RYDE, ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Resident House Surgeon, unmarried. Salary £100 per annum.

SALFORD ROYAL HOSPITAL.—Casualty House Surgeon from August 6th to Sept. 30th. Salary at rate of £85 per annum, with board and residence.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Junior House Surgeon for six months. Salary £80 per annum, with residence, board, and allowance for laundry.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon and Assistant House Physician, unmarried. Salary £65 and £60 per annum respectively, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—Junior Resident Medical Officer. Salary £70 per annum.

SHEFFIELD UNIVERSITY.—Professor of Pathology.

SOUTHPORT INFIRMARY.—Resident Junior House and Visiting Surgeon, unmarried, for six months. Salary £70 per annum, with residence, board, and washing.

STAFFORD, STAFFORDSHIRE COUNTY ASYLUM.—Assistant Medical Officer, unmarried. Salary £160 per annum, with apartments, board, and washing.

STOCKPORT INFIRMARY.—Two Junior House Surgeons. Salary £80 per annum, with board, washing, and residence.

STOCKPORT UNION, STEPPING HILL HOSPITAL.—Resident Assistant Medical Officer. Salary £130 per annum, with apartments, rations, &c.

WARRINGTON, LANCASHIRE COUNTY ASYLUM, Winwick.—Pathologist. Salary £200 per annum, with board, apartments, attendance, and washing.

WEST BROMWICH DISTRICT HOSPITAL.—Assistant Resident House Surgeon, unmarried. Salary £75 per annum, with board, residence, and washing.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY.—Resident House Surgeon. Salary £120 per annum, with board and lodging.

WORCESTER COUNTY AND CITY ASYLUM, Powick.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, washing, and attendance

YORK CITY AND COUNTY TUBERCULOSIS DISPENSARY.—Tuberculosis Officer. Salary £400 per annum.

YORK COUNTY HOSPITAL.—House Surgeon for six months. Salary at rate of £100 per annum, with board, residence, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Acts at Garforth, in the county of York; and at Sheerness, in the county of Kent.

Births, Marriages, and Deaths.

BIRTHS.

POOLEY.—On July 20th, at Gladstone-road, Ranmoor, Sheffield, the wife of G. H. Pooley, F.R.C.S., of a son.

PRINGLE.—On July 22nd, to Dr. and Mrs. John Pringle, of Withington-road, Manchester—a son.

WILKINSON.—On July 19th, at Mansfield Lodge, Simla, the wife of Lieutenant-Colonel E. Wilkinson, I.M.S., of a daughter.

MARRIAGES.

WIGRAM—EDWARDS.—On July 23rd, at St. Peter's, Great Haseley, Loftus Edward Wigram, M.B., to Constance Emma Letitia Edwards, youngest daughter of the Rev. W. Gilbert Edwards.

DEATHS.

CARRUTHERS.—On July 22nd, at Halton House, Runcorn, very suddenly, William Hodgson Carruthers, M.D.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE SWALLOWING OF A PIN AND ITS DANGERS.

Dr. David Sime, of Burgoyne-road, Harringay, N., writes:—A young mother and father came to me in great distress a few weeks ago with their little girl of 4½ years, who about half an hour before had swallowed a pin. On discovering the fact, for the child had said nothing about it, the mother prepared a large dose of some patent purgative, but the father, sensibly enough, demurred to anything being given until the case had been seen by a doctor. They came suggesting the administration of an emetic. The child could swallow easily and without difficulty or pain. On palpation there was no pricking in any part of the abdominal wall. There was likewise no sign of the pin in the mouth or throat, and no scratch or incision could be seen. Doubt was expressed whether the pin had been actually swallowed; it might have slipped out of her mouth. But the little girl was positive on the matter. As she had apparently swallowed the pin inadvertently, without any coughing or choking or any disturbance, and as there was no appearance of any scratch or prick of any kind in the throat, I came to the conclusion that the pin must have gone down head foremost. This fact was viewed as being fortunate, for probably the pin was then lying in the cavity of the stomach, head foremost. Unfortunately no Roentgen apparatus was available. It was further found that the stomach was probably empty, the child having had no food for some hours. To the disappointment, even distress, of the mother it was explained that a purgative—especially a strong one—was not only unnecessary but positively dangerous, for it would probably cause the pin to penetrate the wall of the stomach or intestine, even although the pin was lying head foremost. For similar reasons an emetic would be equally open to objection. The child was ordered at once a large supply of bread-and-milk with a hard-boiled egg to encase the pin and protect the stomach and intestines. Before bed-time she was to have a glass of milk and egg-flip with bread-and-butter. The father, a quiet, intelligent young man, was much impressed with the need of such dieting, and promised that the treatment should be followed in every detail, to the great disappointment of the mother, who wanted immediate relief. The child passed a perfectly peaceful night and next day the bread-and-milk sop in large supply was repeated. No medicine of any kind was administered and no other kind of food. She had no disturbance or pain all day and again she passed the night peacefully. Early on the next morning she had a cup of milk and hot water, with a tea-spoonful and a half of castor oil. In two hours the bowels moved freely, a copious, semi-solid motion. About an inch behind the first of the motion the head of a black pin was visible, lying head foremost and just protruding through the mass.

The kind of case is of interest, not for its rarity, but rather for its comparative commonness. The chief danger lies in the well-meaning but meddlesome interference which Dr. Sime was fortunately able to avert.

THE BIRTH- AND DEATH-RATES IN QUEENSLAND.

ACCORDING to the *Queensland Government Gazette* during May, 1912, in the metropolitan area of Brisbane, 431 births (204 males, 227 females) were registered as against 156 deaths (87 males, 69 females). The excess of births over deaths was thus 275. The corresponding figures for May, 1911, were 339 births and 140 deaths, the excess of births over deaths being 199. Of the mortality, that among children was unduly high, and over 50 per cent. occurred in public institutions, which is interpreted as indicating a growing desire to seek gratuitous medical attendance and nursing even on the part of those who can afford to pay. Gastro-enteritis was the principal cause of death among the young, and deaths from violence were more than ordinarily numerous.

GRADUATION CEREMONY AT THE UNION MEDICAL COLLEGE, PEKING.

THE *Peking Daily News* gives an interesting report of a graduation ceremony at the Union Medical College, Peking. Mr. Liang Shih-yi, representing the President of the Republic, read the President's message to the assembly, in which he says:—"It is a great pleasure to me that I am able specially to delegate Chief Secretary Liang Shih-yi to be present at the second graduation ceremony of your College. I believe the happiness of the people depends largely upon the strong physique of individuals. Past history shows us that improvement of health depends upon medical science. As the world becomes more civilised, sanitary measures are improved and medical science spreads its influence throughout the world. Your College has the worthy object of working for the happiness of this nation and is sending forth trained doctors to contribute their share towards helping the people to be a healthy nation. All this is due to your

charitable spirit. I, therefore, as President, would lead this whole nation to acknowledge with gratitude your great work." The 15 graduates, who were all professing Christians, wore Geneva gowns with facings of purple satin and trencher-caps, and were loudly applauded by their fellow-students. The degrees were conferred by Mr. Liang Shih-yi. The following exhibits were shown in the various rooms of the College: Operating-theatre, anatomical models and drawings, X ray apparatus, materia medica exhibit, bacteriological and pathological specimens, physiological apparatus, tree tents to show a field hospital at work. Dr. E. J. Stuckey, of the London Missionary Society, is principal of the College.

GIBRALTAR.

THE medical officer of health reports the general condition of Gibraltar as having been fairly satisfactory in 1911 when the close aggregation of houses in certain parts of the town is taken into consideration. He gives the general or crude death-rate per 1000 persons living at 16, as compared with 18 in 1910. There were 103 cases of enteric fever amongst the civil population, of which 66 were notified during September. No definite causation could be traced. The mean maximum temperature was 70·7 and the mean minimum 47·7; mean for the year 62·4. The rainfall in 1911 was a little in excess of the average over a period of 115 years (33·31 inches). The greatest rainfall in 24 hours was 3 inches on April 9th. The population, according to the Census taken on April 2nd, 1911, was 25,367 (civil 19,586, Royal Navy 441, military 5340), as compared with a total of 27,460 returned by the Census of 1901. In the Colonial Hospital the daily average number under treatment in the wards was 55; the total number treated, including those remaining in the hospital at the end of 1910 (55), was 748 (593 males, 155 females). Of the 272 patients who underwent surgical operations, eight subsequently died, or approximately 3 per cent. of those operated on. The out-patients numbered 3266, as compared with 10,615 in 1910. The small-pox branch of the hospital received 16 patients for treatment in 1911, of whom two died. The whole institution was maintained at a cost of £6237. The net cost per bed was £99 9s., or 5s. 5d. a day.

ERRATA.—In the notice published in THE LANCET of July 13th, p. 111, of Dr. H. W. Sinclair's annual report on the medical inspection of school children in Essex reference was made to the arrangements for the treatment of visual defects by the education authority, and the statement was made that retinoscopy is not attempted. Dr. Sinclair writes to point out that this is incorrect, as every child receiving a prescription for spectacles in the county is first subjected to retinoscopy. On p. 58 of the report there is a reference to the method adopted of preparing the eyes of children by means of atropine ointment. For the sake of the work that the Essex Education Committee is carrying out, Dr. Sinclair wishes to make it clear that every precaution is taken to ensure that the children treated are examined and prescribed for in accordance with modern scientific methods.—With regard to an analytical notice of Muthol which appeared in our last issue Mr. Rudolph Demuth points out that the sentence "and is oily in the mouth" should read "and is *not* oily in the mouth." The impression given in the mouth is, in fact, that of a jelly rather than that of an oil.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced for 1912:—

May to October (London, Earl's Court).—Shakespeare's England.
July 19th–27th (Liverpool).—British Medical Association, Eightieth Annual Meeting.
,, 24th–30th (University of London).—First International Eugenics Congress.
,, 25th–28th (Berlin).—Royal Institute of Public Health.
,, 26th–31st (Prague).—Sixth International Congress of Radiology and Medical Electrology.
,, 29th–August 3rd (York).—Congress and Exhibition of the Royal Sanitary Institute.
,, 29th—August 3rd (The Hague).—Second International Moral Education Congress.
Aug. 5th–10th (Oxford).—Second International Congress of Entomology.
,, 6th–10th (Düsseldorf).—Third International Medical Congress on Industrial Accidents.
,, 6th–27th (Balkans, Turkey, Greece).—Ninth Annual Congress of the Association Internationale de Perfectionnement Scientifique (A.P.M.).
7th–10th (Glasgow University).—Thirty-second Annual Meeting of the British Dental Association.
,, 8th–30th (Central Europe).—Medical Study Tour ("A.P.M."), starting at Besançon.
,, 10th–14th (Edmonton and Calgary, Alberta).—Annual Meeting, Canadian Medical Association.
Aug. 11th–18th (Cracow).—Eighth Esperanto Congress.
,, 12–17th (Boston, U.S.A.).—Ninth International Otological Congress.
,, 24th–Sept. 9th (Toronto).—Canadian National Exhibition.
August (Harvard University, Cambridge, Mass.).—Ninth International Otological Congress.
Sept. 1st–14th (France).—Voyage d'Etudes Médicales.
,, 2nd–7th (Wrexham).—Welsh National Eisteddfod.
,, 4th (Washington, D.C.) and Sept. 6th–13th (New York). Eighth International Congress of Applied Chemistry.
,, 4th–11th (Dundee).—British Association.
,, 8th–11th (London, Royal Agricultural Hall).—Dairy Show.
,, 9th (probable opening date) (Geneva).—International Congress of Anthropology and Prehistoric Archeology.
,, 9th–10th (San Sebastian).—Third Spanish Congress of Tuberculosis.
,, 10th–12th (Berlin).—Sixth International Congress of Obstetrics and Gynæcology.
,, 15th–21st (Münster).—Eighty-fourth Meeting of the German Association of Scientists and Medical Practitioners.
,, 23rd–25th (Toulouse).—"Cold" Congress. (Cold Storage and Cryologic Methods.)
,, 23rd–28th (Washington, D.C.).—Fifteenth International Congress on Hygiene and Demography.
,, 27th–29th (Hamburg).—Sixth Annual Meeting of the German Society of Specialists in Nerve Diseases.
,, (Toronto).—Second Annual Meeting, Canadian Public Health Association.
September or October (Perth, Western Australia).—(Three days.) Health Congress.
Oct. 3rd and 4th (Columbia, South Carolina).—National Conference on Pellagra.
,, 9th–12th (New York).—Electrical Exposition and Automobile Show.
,, 10th–13th (Meran).—Seventh Austrian Congress of Balneologists.
,, 13th–16th (Paris).—Thirteenth French Congress of Medicine.
,, 17th–23rd (Paris).—First International Congress of Comparative Pathology.
,, 29th–Nov. 2nd (London, Royal Horticultural Hall).—Twenty-third Universal Cookery and Food Exhibition.

In 1913:—
(Easter week) (Berlin).—Fourth International Congress for Physiotherapy.
Aug. 6th–12th.—(London).—Seventeenth International Congress of Medicine.
,, 22nd–28th (Cambridge).—International Mathematical Congress.
September (Birmingham).—British Association.
(London).—Historical Medical Exhibition. (Organised by Mr. Henry S. Wellcome.)
(London).—International Historical Congress.
(Chicago).—Congress of the International Association of Refrigeration.
(Washington).—Congress of American Physicians and Surgeons.
(Paris).—Congress of Physical Education.
(Milan).—Fourteenth International Anti-alcoholic Congress.
(Buffalo).—Fourth International Congress of School Hygiene.

In 1914:—
(Vienna).—Third International Congress for Professional Diseases.
(Auckland, N.Z.).—Australasian Medical Congress.
(St. Petersburg).—Third Mendeléeff Congress of Pure and Applied Chemistry and Physics.
(Washington, D.C.).—International Congress of Americanists.
(London).—International Dental Congress.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 24th, 1912.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 18	29·93	N.E.	...	110	71	59	58	62	Cloudy
,, 19	29·88	N.	...	80	59	51	57	57	Cloudy
,, 20	29·85	N.	0·01	100	63	53	54	57	Fine
,, 21	29·93	S.E.	...	111	74	57	59	64	Cloudy
,, 22	29·97	S.W.	...	86	68	57	58	63	Overcast
,, 23	29·93	S.E.	0·17	110	73	59	61	62	Overcast
,, 24	29·87	S.	0·01	115	74	62	62	67	Fine

The following journals, magazines, &c., have been received.—Guy's Hospital Gazette, Canadian Medical Association Journal, Journal of Mental Science, St. Thomas's Hospital Gazette, Office International d'Hygiène Publique Bulletin Mensuel, Cleveland Medical Journal, Archiv für Experimentelle Pathologie und Pharmakologie, China Medical Journal, American Journal of Obstetrics, Eugenics Review, Pacific Medical Journal, Albany Medical Annals, American Medicine.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (31st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (1st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological (2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and (2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.) Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M.), Aural, (2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

SATURDAY (3rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.), Hospital operations are performed daily.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1912, which was completed with the issue of June 29th, were given in THE LANCET of July 6th.

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